

Sequence Listing

<110> Baker, Kevin
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Filvaroff, Ellen
Gerritsen, Mary
Goddard, Audrey
Godowski, Paul
Grimaldi, Christopher
Gurney, Austin
Hillan, Kenneth
Kljavin, Ivar
Napier, Mary
Roy, Margaret
Tumas, Daniel
Wood, William

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35 40 45
Asp Asp Asp Asp Asp Glu Asp Asn Ser Leu Phe Pro Thr Arg Glu
50 55 60
Pro Arg Ser His Phe Phe Pro Phe Asp Leu Phe Pro Met Cys Pro
65 70 75
Phe Gly Cys Gln Cys Tyr Ser Arg Val Val His Cys Ser Asp Leu
80 85 90
Gly Leu Thr Ser Val Pro Thr Asn Ile Pro Phe Asp Thr Arg Met
95 100 105
Leu Asp Leu Gln Asn Asn Lys Ile Lys Glu Ile Lys Glu Asn Asp
110 115 120
Phe Lys Gly Leu Thr Ser Leu Tyr Gly Leu Ile Leu Asn Asn Asn
125 130 135
Lys Leu Thr Lys Ile His Pro Lys Ala Phe Leu Thr Thr Lys Lys
140 145 150
Leu Arg Arg Leu Tyr Leu Ser His Asn Gln Leu Ser Glu Ile Pro
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170 175 180
Lys Val Lys Lys Ile Gln Lys Asp Thr Phe Lys Gly Met Asn Ala
185 190 195
Leu His Val Leu Glu Met Ser Ala Asn Pro Leu Asp Asn Asn Gly
200 205 210

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| Ile | Ala | Glu | Ala | Lys | Leu | Thr | Ser | Val | Pro | Lys | Gly | Leu | Pro | Pro |
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| Thr | Leu | Leu | Glu | Leu | His | Leu | Asp | Tyr | Asn | Lys | Ile | Ser | Thr | Val |
| | | | | 245 | | | | | 250 | | | | | 255 |
| Glu | Leu | Glu | Asp | Phe | Lys | Arg | Tyr | Lys | Glu | Leu | Gln | Arg | Leu | Gly |
| | | | | 260 | | | | | 265 | | | | | 270 |
| Leu | Gly | Asn | Asn | Lys | Ile | Thr | Asp | Ile | Glu | Asn | Gly | Ser | Leu | Ala |
| | | | | 275 | | | | | 280 | | | | | 285 |
| Asn | Ile | Pro | Arg | Val | Arg | Glu | Ile | His | Leu | Glu | Asn | Asn | Lys | Leu |
| | | | | 290 | | | | | 295 | | | | | 300 |
| Lys | Lys | Ile | Pro | Ser | Gly | Leu | Pro | Glu | Leu | Lys | Tyr | Leu | Gln | Ile |
| | | | | 305 | | | | | 310 | | | | | 315 |
| Ile | Phe | Leu | His | Ser | Asn | Ser | Ile | Ala | Arg | Val | Gly | Val | Asn | Asp |
| | | | | 320 | | | | | 325 | | | | | 330 |
| Phe | Cys | Pro | Thr | Val | Pro | Lys | Met | Lys | Lys | Ser | Leu | Tyr | Ser | Ala |
| | | | | 335 | | | | | 340 | | | | | 345 |
| Ile | Ser | Leu | Phe | Asn | Asn | Pro | Val | Lys | Tyr | Trp | Glu | Met | Gln | Pro |
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| Ala | Thr | Phe | Arg | Cys | Val | Leu | Ser | Arg | Met | Ser | Val | Gln | Leu | Gly |
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Asp Glu Thr Trp His Pro Asp Leu Gly Gln Pro Phe Gly Val Met
65 70 75

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| Thr | Arg | Gly | Pro | Gly 95 | Arg | Val | Ser | Cys | Lys 100 | Asn | Ile | Lys | Pro | Glu 105 |
| Cys | Pro | Thr | Pro | Ala 110 | Cys | Gly | Gln | Pro | Arg 115 | Gln | Leu | Pro | Gly | His 120 |
| Cys | Cys | Gln | Thr | Cys 125 | Pro | Gln | Glu | Arg | Ser 130 | Ser | Ser | Glu | Arg | Glu 135 |
| Pro | Ser | Gly | Leu | Ser 140 | Phe | Glu | Tyr | Pro | Arg 145 | Asp | Pro | Glu | His | Arg 150 |
| Ser | Tyr | Ser | Asp | Arg 155 | Gly | Glu | Pro | Gly | Ala 160 | Glu | Glu | Arg | Ala | Arg 165 |
| Gly | Asp | Gly | His | Thr 170 | Asp | Phe | Val | Ala | Leu 175 | Leu | Thr | Gly | Pro | Arg 180 |
| Ser | Gln | Ala | Val | Ala 185 | Arg | Ala | Arg | Val | Ser 190 | Leu | Leu | Arg | Ser | Ser 195 |
| Leu | Arg | Phe | Ser | Ile 200 | Ser | Tyr | Arg | Arg | Leu 205 | Asp | Arg | Pro | Thr | Arg 210 |
| Ile | Arg | Phe | Ser | Asp 215 | Ser | Asn | Gly | Ser | Val 220 | Leu | Phe | Glu | His | Pro 225 |
| Ala | Ala | Pro | Thr | Gln 230 | Asp | Gly | Leu | Val | Cys 235 | Gly | Val | Trp | Arg | Ala 240 |
| Val | Pro | Arg | Leu | Ser 245 | Leu | Arg | Leu | Leu | Arg 250 | Ala | Glu | Gln | Leu | His 255 |
| Val | Ala | Leu | Val | Thr 260 | Leu | Thr | His | Pro | Ser 265 | Gly | Glu | Val | Trp | Gly 270 |
| Pro | Leu | Ile | Arg | His 275 | Arg | Ala | Leu | Ala | Ala 280 | Glu | Thr | Phe | Ser | Ala 285 |
| Ile | Leu | Thr | Leu | Glu 290 | Gly | Pro | Pro | Gln | Gln 295 | Gly | Val | Gly | Gly | Ile 300 |
| Thr | Leu | Leu | Thr | Leu 305 | Ser | Asp | Thr | Glu | Asp 310 | Ser | Leu | His | Phe | Leu 315 |
| Leu | Leu | Phe | Arg | Gly 320 | Leu | Leu | Glu | Pro | Arg 325 | Ser | Gly | Gly | Leu | Thr 330 |
| Gln | Val | Pro | Leu | Arg 335 | Leu | Gln | Ile | Leu | His 340 | Gln | Gly | Gln | Leu | Leu 345 |
| Arg | Glu | Leu | Gln | Ala 350 | Asn | Val | Ser | Ala | Gln 355 | Glu | Pro | Gly | Phe | Ala 360 |
| Glu | Val | Leu | Pro | Asn | Leu | Thr | Val | Gln | Glu | Met | Asp | Trp | Leu | Val |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|
| | | | | | | | | | | | | | | 365 | | | | | | | | | | | | | | | 370 | | | | | | | | | | | | | | | 375 |
| Leu | Gly | Glu | Leu | Gln | Met | Ala | Leu | Glu | Trp | Ala | Gly | Arg | Pro | Gly | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 380 | | | | | | | | | | | | | | | 385 | | | | | | | | | | | | | | | 390 |
| Leu | Arg | Ile | Ser | Gly | His | Ile | Ala | Ala | Arg | Lys | Ser | Cys | Asp | Val | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 395 | | | | | | | | | | | | | | | 400 | | | | | | | | | | | | | | | 405 |
| Leu | Gln | Ser | Val | Leu | Cys | Gly | Ala | Asp | Ala | Leu | Ile | Pro | Val | Gln | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 410 | | | | | | | | | | | | | | | 415 | | | | | | | | | | | | | | | 420 |
| Thr | Gly | Ala | Ala | Gly | Ser | Ala | Ser | Leu | Thr | Leu | Leu | Gly | Asn | Gly | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 425 | | | | | | | | | | | | | | | 430 | | | | | | | | | | | | | | | 435 |
| Ser | Leu | Ile | Tyr | Gln | Val | Gln | Val | Val | Gly | Thr | Ser | Ser | Glu | Val | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 440 | | | | | | | | | | | | | | | 445 | | | | | | | | | | | | | | | 450 |
| Val | Ala | Met | Thr | Leu | Glu | Thr | Lys | Pro | Gln | Arg | Arg | Asp | Gln | Arg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 455 | | | | | | | | | | | | | | | 460 | | | | | | | | | | | | | | | 465 |
| Thr | Val | Leu | Cys | His | Met | Ala | Gly | Leu | Gln | Pro | Gly | Gly | His | Thr | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 470 | | | | | | | | | | | | | | | 475 | | | | | | | | | | | | | | | 480 |
| Ala | Val | Gly | Ile | Cys | Pro | Gly | Leu | Gly | Ala | Arg | Gly | Ala | His | Met | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 485 | | | | | | | | | | | | | | | 490 | | | | | | | | | | | | | | | 495 |
| Leu | Leu | Gln | Asn | Glu | Leu | Phe | Leu | Asn | Val | Gly | Thr | Lys | Asp | Phe | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 500 | | | | | | | | | | | | | | | 505 | | | | | | | | | | | | | | | 510 |
| Pro | Asp | Gly | Glu | Leu | Arg | Gly | His | Val | Ala | Ala | Leu | Pro | Tyr | Cys | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 515 | | | | | | | | | | | | | | | 520 | | | | | | | | | | | | | | | 525 |
| Gly | His | Ser | Ala | Arg | His | Asp | Thr | Leu | Pro | Val | Pro | Leu | Ala | Gly | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 530 | | | | | | | | | | | | | | | 535 | | | | | | | | | | | | | | | 540 |
| Ala | Leu | Val | Leu | Pro | Pro | Val | Lys | Ser | Gln | Ala | Ala | Gly | His | Ala | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 545 | | | | | | | | | | | | | | | 550 | | | | | | | | | | | | | | | 555 |
| Trp | Leu | Ser | Leu | Asp | Thr | His | Cys | His | Leu | His | Tyr | Glu | Val | Leu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 560 | | | | | | | | | | | | | | | 565 | | | | | | | | | | | | | | | 570 |
| Leu | Ala | Gly | Leu | Gly | Gly | Ser | Glu | Gln | Gly | Thr | Val | Thr | Ala | His | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 575 | | | | | | | | | | | | | | | 580 | | | | | | | | | | | | | | | 585 |
| Leu | Leu | Gly | Pro | Pro | Gly | Thr | Pro | Gly | Pro | Arg | Arg | Leu | Leu | Lys | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 590 | | | | | | | | | | | | | | | 595 | | | | | | | | | | | | | | | 600 |
| Gly | Phe | Tyr | Gly | Ser | Glu | Ala | Gln | Gly | Val | Val | Lys | Asp | Leu | Glu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 605 | | | | | | | | | | | | | | | 610 | | | | | | | | | | | | | | | 615 |
| Pro | Glu | Leu | Leu | Arg | His | Leu | Ala | Lys | Gly | Met | Ala | Ser | Leu | Met | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 620 | | | | | | | | | | | | | | | 625 | | | | | | | | | | | | | | | 630 |
| Ile | Thr | Thr | Lys | Gly | Ser | Pro | Arg | Gly | Glu | Leu | Arg | Gly | Gln | Val | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 635 | | | | | | | | | | | | | | | 640 | | | | | | | | | | | | | | | 645 |
| His | Ile | Ala | Asn | Gln | Cys | Glu | Val | Gly | Gly | Leu | Arg | Leu | Glu | Ala | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 650 | | | | | | | | | | | | | | | 655 | | | | | | | | | | | | | | | 660 |

| | | | |
|---|-----|-----|-----|
| Ala Gly Ala Glu Gly Val Arg Ala Leu Gly Ala Pro Asp Thr Ala | 665 | 670 | 675 |
| Ser Ala Ala Pro Pro Val Val Pro Gly Leu Pro Ala Leu Ala Pro | 680 | 685 | 690 |
| Ala Lys Pro Gly Gly Pro Gly Arg Pro Arg Asp Pro Asn Thr Cys | 695 | 700 | 705 |
| Phe Phe Glu Gly Gln Gln Arg Pro His Gly Ala Arg Trp Ala Pro | 710 | 715 | 720 |
| Asn Tyr Asp Pro Leu Cys Ser Leu Cys Thr Cys Gln Arg Arg Thr | 725 | 730 | 735 |
| Val Ile Cys Asp Pro Val Val Cys Pro Pro Pro Ser Cys Pro His | 740 | 745 | 750 |
| Pro Val Gln Ala Pro Asp Gln Cys Cys Pro Val Cys Pro Glu Lys | 755 | 760 | 765 |
| Gln Asp Val Arg Asp Leu Pro Gly Leu Pro Arg Ser Arg Asp Pro | 770 | 775 | 780 |
| Gly Glu Gly Cys Tyr Phe Asp Gly Asp Arg Ser Trp Arg Ala Ala | 785 | 790 | 795 |
| Gly Thr Arg Trp His Pro Val Val Pro Pro Phe Gly Leu Ile Lys | 800 | 805 | 810 |
| Cys Ala Val Cys Thr Cys Lys Gly Gly Thr Gly Glu Val His Cys | 815 | 820 | 825 |
| Glu Lys Val Gln Cys Pro Arg Leu Ala Cys Ala Gln Pro Val Arg | 830 | 835 | 840 |
| Val Asn Pro Thr Asp Cys Cys Lys Gln Cys Pro Val Gly Ser Gly | 845 | 850 | 855 |
| Ala His Pro Gln Leu Gly Asp Pro Met Gln Ala Asp Gly Pro Arg | 860 | 865 | 870 |
| Gly Cys Arg Phe Ala Gly Gln Trp Phe Pro Glu Ser Gln Ser Trp | 875 | 880 | 885 |
| His Pro Ser Val Pro Pro Phe Gly Glu Met Ser Cys Ile Thr Cys | 890 | 895 | 900 |
| Arg Cys Gly Ala Gly Val Pro His Cys Glu Arg Asp Asp Cys Ser | 905 | 910 | 915 |
| Leu Pro Leu Ser Cys Gly Ser Gly Lys Glu Ser Arg Cys Cys Ser | 920 | 925 | 930 |
| Arg Cys Thr Ala His Arg Arg Pro Pro Glu Thr Arg Thr Asp Pro | 935 | 940 | 945 |
| Glu Leu Glu Lys Glu Ala Glu Gly Ser | | | |

<210> 8
 <211> 44
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic Oligonucleotide probe

 <400> 8
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 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 9
 cggacgcgtg gggcctgcgc acccagct 28

 <210> 10
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 10
 gccgctcccc gaacgggcag cggctccttc tcagaa 36

 <210> 11
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 11
 ggcgcacagc acgcagcgca tcaccccgaa tggctc 36

 <210> 12
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic Oligonucleotide Probe

 <400> 12
 gtgctgccca tccgttctga gaagga 26

 <210> 13

<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 13
gcaggggtgct caaacaggac ac 22

<210> 14
<211> 3231
<212> DNA
<213> Homo Sapien

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ccggccggcc atgcagcccc gccgcgccc gccgcccggg gcgcagctgc 150
tgcccgcgct ggccctgctg ctgctgctgc tcggagcggg gccccgaggc 200
agctccctgg ccaaccgggt gccgcgcgcg cccttgctctg cgcgcggggc 250
gtgcgcgcgc cagccctgcc ggaatggggg tgtgtgcacc tcgcgcctg 300
agccggaccc gcagcaccgc gccccgcgcg gcgagcctgg ctacagctgc 350
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catggcacc cgcagcttc agcctgttcc tgctactcag gagcctgaca 600
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cttaactctg gtggtgaagg tcagcacctg tgtgccgggg gagagtcacg 1050

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 cctagacca tgcagaaatg gagcaacatg catttccagt ctccagtggat 1350
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 ccggcatgcc aggtttggaa agaaatcccg gcctgcaatg tatgatgtga 2250
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 tcagtagtga gtatttctca tagtgcagct ttatttatct ccaggatgtt 3150
 tttgtggctg tatttgattg atatgtgctt cttctgattc ttgctaattt 3200
 ccaaccatat tgaataaatg tgatcaagtc a 3231

<210> 15
 <211> 737
 <212> PRT
 <213> Homo Sapien

<400> 15
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 Ala Leu Ala Leu Leu Leu Leu Leu Gly Ala Gly Pro Arg Gly
 20 25 30
 Ser Ser Leu Ala Asn Pro Val Pro Ala Ala Pro Leu Ser Ala Pro
 35 40 45
 Gly Pro Cys Ala Ala Gln Pro Cys Arg Asn Gly Gly Val Cys Thr
 50 55 60
 Ser Arg Pro Glu Pro Asp Pro Gln His Pro Ala Pro Ala Gly Glu
 65 70 75
 Pro Gly Tyr Ser Cys Thr Cys Pro Ala Gly Ile Ser Gly Ala Asn
 80 85 90
 Cys Gln Leu Val Ala Asp Pro Cys Ala Ser Asn Pro Cys His His
 95 100 105
 Gly Asn Cys Ser Ser Ser Ser Ser Ser Ser Asp Gly Tyr Leu

| | | |
|-------------------------------------|-------------------------|-----|
| 110 | 115 | 120 |
| Cys Ile Cys Asn Glu Gly Tyr Glu Gly | Pro Asn Cys Glu Gln Ala | |
| 125 | 130 | 135 |
| Leu Pro Ser Leu Pro Ala Thr Gly Trp | Thr Glu Ser Met Ala Pro | |
| 140 | 145 | 150 |
| Arg Gln Leu Gln Pro Val Pro Ala Thr | Gln Glu Pro Asp Lys Ile | |
| 155 | 160 | 165 |
| Leu Pro Arg Ser Gln Ala Thr Val Thr | Leu Pro Thr Trp Gln Pro | |
| 170 | 175 | 180 |
| Lys Thr Gly Gln Lys Val Val Glu Met | Lys Trp Asp Gln Val Glu | |
| 185 | 190 | 195 |
| Val Ile Pro Asp Ile Ala Cys Gly Asn | Ala Ser Ser Asn Ser Ser | |
| 200 | 205 | 210 |
| Ala Gly Gly Arg Leu Val Ser Phe Glu | Val Pro Gln Asn Thr Ser | |
| 215 | 220 | 225 |
| Val Lys Ile Arg Gln Asp Ala Thr Ala | Ser Leu Ile Leu Leu Trp | |
| 230 | 235 | 240 |
| Lys Val Thr Ala Thr Gly Phe Gln Gln | Cys Ser Leu Ile Asp Gly | |
| 245 | 250 | 255 |
| Arg Ser Val Thr Pro Leu Gln Ala Ser | Gly Gly Leu Val Leu Leu | |
| 260 | 265 | 270 |
| Glu Glu Met Leu Ala Leu Gly Asn Asn | His Phe Ile Gly Phe Val | |
| 275 | 280 | 285 |
| Asn Asp Ser Val Thr Lys Ser Ile Val | Ala Leu Arg Leu Thr Leu | |
| 290 | 295 | 300 |
| Val Val Lys Val Ser Thr Cys Val Pro | Gly Glu Ser His Ala Asn | |
| 305 | 310 | 315 |
| Asp Leu Glu Cys Ser Gly Lys Gly Lys | Cys Thr Thr Lys Pro Ser | |
| 320 | 325 | 330 |
| Glu Ala Thr Phe Ser Cys Thr Cys Glu | Glu Gln Tyr Val Gly Thr | |
| 335 | 340 | 345 |
| Phe Cys Glu Glu Tyr Asp Ala Cys Gln | Arg Lys Pro Cys Gln Asn | |
| 350 | 355 | 360 |
| Asn Ala Ser Cys Ile Asp Ala Asn Glu | Lys Gln Asp Gly Ser Asn | |
| 365 | 370 | 375 |
| Phe Thr Cys Val Cys Leu Pro Gly Tyr | Thr Gly Glu Leu Cys Gln | |
| 380 | 385 | 390 |
| Ser Lys Ile Asp Tyr Cys Ile Leu Asp | Pro Cys Arg Asn Gly Ala | |
| 395 | 400 | 405 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
| Thr | Cys | Ile | Ser | Ser 410 | Leu | Ser | Gly | Phe | Thr 415 | Cys | Gln | Cys | Pro | Glu 420 |
| Gly | Tyr | Phe | Gly | Ser 425 | Ala | Cys | Glu | Glu | Lys 430 | Val | Asp | Pro | Cys | Ala 435 |
| Ser | Ser | Pro | Cys | Gln 440 | Asn | Asn | Gly | Thr | Cys 445 | Tyr | Val | Asp | Gly | Val 450 |
| His | Phe | Thr | Cys | Asn 455 | Cys | Ser | Pro | Gly | Phe 460 | Thr | Gly | Pro | Thr | Cys 465 |
| Ala | Gln | Leu | Ile | Asp 470 | Phe | Cys | Ala | Leu | Ser 475 | Pro | Cys | Ala | His | Gly 480 |
| Thr | Cys | Arg | Ser | Val 485 | Gly | Thr | Ser | Tyr | Lys 490 | Cys | Leu | Cys | Asp | Pro 495 |
| Gly | Tyr | His | Gly | Leu 500 | Tyr | Cys | Glu | Glu | Glu 505 | Tyr | Asn | Glu | Cys | Leu 510 |
| Ser | Ala | Pro | Cys | Leu 515 | Asn | Ala | Ala | Thr | Cys 520 | Arg | Asp | Leu | Val | Asn 525 |
| Gly | Tyr | Glu | Cys | Val 530 | Cys | Leu | Ala | Glu | Tyr 535 | Lys | Gly | Thr | His | Cys 540 |
| Glu | Leu | Tyr | Lys | Asp 545 | Pro | Cys | Ala | Asn | Val 550 | Ser | Cys | Leu | Asn | Gly 555 |
| Ala | Thr | Cys | Asp | Ser 560 | Asp | Gly | Leu | Asn | Gly 565 | Thr | Cys | Ile | Cys | Ala 570 |
| Pro | Gly | Phe | Thr | Gly 575 | Glu | Glu | Cys | Asp | Ile 580 | Asp | Ile | Asn | Glu | Cys 585 |
| Asp | Ser | Asn | Pro | Cys 590 | His | His | Gly | Gly | Ser 595 | Cys | Leu | Asp | Gln | Pro 600 |
| Asn | Gly | Tyr | Asn | Cys 605 | His | Cys | Pro | His | Gly 610 | Trp | Val | Gly | Ala | Asn 615 |
| Cys | Glu | Ile | His | Leu 620 | Gln | Trp | Lys | Ser | Gly 625 | His | Met | Ala | Glu | Ser 630 |
| Leu | Thr | Asn | Met | Pro 635 | Arg | His | Ser | Leu | Tyr 640 | Ile | Ile | Ile | Gly | Ala 645 |
| Leu | Cys | Val | Ala | Phe 650 | Ile | Leu | Met | Leu | Ile 655 | Ile | Leu | Ile | Val | Gly 660 |
| Ile | Cys | Arg | Ile | Ser 665 | Arg | Ile | Glu | Tyr | Gln 670 | Gly | Ser | Ser | Arg | Pro 675 |
| Ala | Tyr | Glu | Glu | Phe 680 | Tyr | Asn | Cys | Arg | Ser 685 | Ile | Asp | Ser | Glu | Phe 690 |
| Ser | Asn | Ala | Ile | Ala | Ser | Ile | Arg | His | Ala | Arg | Phe | Gly | Lys | Lys |

695

700

705

Ser Arg Pro Ala Met Tyr Asp Val Ser Pro Ile Ala Tyr Glu Asp
 710 715 720

Tyr Ser Pro Asp Asp Lys Pro Leu Val Thr Leu Ile Lys Thr Lys
 725 730 735

Asp Leu

<210> 16

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic Oligonucleotide Probe

<400> 16

tgtaaaacga cggccagtta aatagacctg caattattaa tct 43

<210> 17

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic Oligonucleotide Probe

<400> 17

caggaaacag ctatgaccac ctgcacacct gcaaattccat t 41

<210> 18

<211> 508

<212> DNA

<213> Homo Sapien

<400> 18

ctctggaagg tcacggccac aggattccaa cagtgtctccc tcatagatgg 50

acgaaagtgt gacccccctt tcaggctttc aggggggactg gtctctctgg 100

aggagatgct cgccttgggg aataatcact ttattggttt tgtgaatgat 150

tctgtgacta agtctattgt ggctttgctg ttaactctgg tggatgaagg 200

cagcacctgt gtgccggggg agagtcacgc aaatgacttg gagggttcag 250

gaaaaggaaa atgcaccacg aagccgtcag aggcaacttt ttctgtacc 300

tgtgaggagc agtacgtggg tactttctgt gaagaatacg atgcttgcca 350

gaggaaacct tgccaaaaca acgcgagctg tattgatgca aatgaaaagc 400

aagatgggag caatttcacc tgtgtttgcc ttctgggta tactggagag 450

ctttgccaac cgaactgaga ttggagcgaa cgacctacac cgaactgaga 500

taggggag 508

<210> 19
 <211> 508
 <212> DNA
 <213> Homo Sapien

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 acgaaagtgt gacccccctt tcaggctttc agggggactg gtcctcctgg 100
 aggagatgct cgccttgggg aataatcact ttattggttt tgtgaatgat 150
 tctgtgacta agtctattgt ggctttgctc ttaactctgg tggatgaagg 200
 cagcacctgt gtgccggggg agagtcacgc aaatgacttg gagggttcag 250
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 tgtgaggagc agtacgtggg tactttctgt gaagaatacg atgcttgcca 350
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 aagatgggag caatttcacc tgtgtttgcc ttctgggta tactggagag 450
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 taggggag 508

<210> 20
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic Oligonucleotide Probe

<400> 20
 ctctggaagg tcacggccac agg 23

<210> 21
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide probe

<400> 21
 ctacgttcgg ttggcaaagc tctc 24

<210> 22
 <211> 69
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 22

cagtgtctccc tcatagatgg acgaaagtgt gacccccctt tcaggcgaga 50

gctttgccaa ccgaactga 69

<210> 23

<211> 1520

<212> DNA

<213> Homo Sapien

<400> 23

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acaccacgcc agggcccccc agagccctca ccacgtggg cgccccaga 100

gcccacacca tgccgggcac ctacgtctcc tcgaccacac tcagtagtcc 150

cagcaccag ggctgcaag agcaggcacg ggccctgatg cgggacttcc 200

cgctcgtgga cggccacaac gacctgcccc tggctctaag gcagggtttac 250

cagaaagggc tacaggatgt taacctgctc aatttcagct acggccagac 300

cagcctggac aggcttagag atggcctcgt gggcgcccag ttctggtcag 350

cctatgtgcc atgccagacc caggaccggg atgccttgcg cctcaccctg 400

gagcagattg acctcatagc ccgcatgtgt gcctcctatt ctgagctgga 450

gcttgtgacc tcggctaaag ctctgaacga cactcagaaa ttggcctgcc 500

tcacgggtgt agaggggtggc cactcgtctg acaatagcct ctccatctta 550

cgtaccttct acatgctggg agtgcgttac ctgacgtca cccacacctg 600

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acaacatcag cgggctgact gactttggtg agaagtggtt ggcagaaatg 700

aaccgcttgg gcatgatggt agacttatcc catgtctcag atgctgtggc 750

acggcggggc ctggaagtgt cacaggcacc tgtgatcttc tccactcgg 800

ctgcccgggg tgtgtgcaac agtgcctgga atgttctga tgacatcctg 850

cagcttctga agaagaacgg tggcgtcgtg atggtgtctt tgtccatggg 900

agtaatacag tgcaacccat cagccaatgt gtccactgtg gcagatcact 950

tcgaccacat caaggctgtc attggatcca agttcatcgg gattggtgga 1000

gattatgatg gggccggcaa attccctcag gggctggaag acgtgtccac 1050

ataccgggtc ctgatagagg agttgctgag tcgtggctgg agtgaggaag 1100

agcttcaggg tgtccttcgt ggaaacctgc tgcgggtctt cagacaagtg 1150

gaaaaggtac aggaagaaaa caaatggcaa agcccccttgg aggacaagtt 1200
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 ccacatggcc ccagtccttg cagttgtggc caccttccca gtccttattc 1400
 tgtggctctg atgaccagc tagtctgcc agatgtcact gtagcaagcc 1450
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<210> 24
 <211> 433
 <212> PRT
 <213> Homo Sapien

<400> 24
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 20 25 30
 Pro Leu Val Asp Gly His Asn Asp Leu Pro Leu Val Leu Arg Gln
 35 40 45
 Val Tyr Gln Lys Gly Leu Gln Asp Val Asn Leu Arg Asn Phe Ser
 50 55 60
 Tyr Gly Gln Thr Ser Leu Asp Arg Leu Arg Asp Gly Leu Val Gly
 65 70 75
 Ala Gln Phe Trp Ser Ala Tyr Val Pro Cys Gln Thr Gln Asp Arg
 80 85 90
 Asp Ala Leu Arg Leu Thr Leu Glu Gln Ile Asp Leu Ile Arg Arg
 95 100 105
 Met Cys Ala Ser Tyr Ser Glu Leu Glu Leu Val Thr Ser Ala Lys
 110 115 120
 Ala Leu Asn Asp Thr Gln Lys Leu Ala Cys Leu Ile Gly Val Glu
 125 130 135
 Gly Gly His Ser Leu Asp Asn Ser Leu Ser Ile Leu Arg Thr Phe
 140 145 150
 Tyr Met Leu Gly Val Arg Tyr Leu Thr Leu Thr His Thr Cys Asn
 155 160 165
 Thr Pro Trp Ala Glu Ser Ser Ala Lys Gly Val His Ser Phe Tyr
 170 175 180

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Asn | Ile | Ser | Gly | Leu | Thr | Asp | Phe | Gly | Glu | Lys | Val | Val | Ala | 185 | 190 | 195 |
| Glu | Met | Asn | Arg | Leu | Gly | Met | Met | Val | Asp | Leu | Ser | His | Val | Ser | 200 | 205 | 210 |
| Asp | Ala | Val | Ala | Arg | Arg | Ala | Leu | Glu | Val | Ser | Gln | Ala | Pro | Val | 215 | 220 | 225 |
| Ile | Phe | Ser | His | Ser | Ala | Ala | Arg | Gly | Val | Cys | Asn | Ser | Ala | Arg | 230 | 235 | 240 |
| Asn | Val | Pro | Asp | Asp | Ile | Leu | Gln | Leu | Leu | Lys | Lys | Asn | Gly | Gly | 245 | 250 | 255 |
| Val | Val | Met | Val | Ser | Leu | Ser | Met | Gly | Val | Ile | Gln | Cys | Asn | Pro | 260 | 265 | 270 |
| Ser | Ala | Asn | Val | Ser | Thr | Val | Ala | Asp | His | Phe | Asp | His | Ile | Lys | 275 | 280 | 285 |
| Ala | Val | Ile | Gly | Ser | Lys | Phe | Ile | Gly | Ile | Gly | Gly | Asp | Tyr | Asp | 290 | 295 | 300 |
| Gly | Ala | Gly | Lys | Phe | Pro | Gln | Gly | Leu | Glu | Asp | Val | Ser | Thr | Tyr | 305 | 310 | 315 |
| Pro | Val | Leu | Ile | Glu | Glu | Leu | Leu | Ser | Arg | Gly | Trp | Ser | Glu | Glu | 320 | 325 | 330 |
| Glu | Leu | Gln | Gly | Val | Leu | Arg | Gly | Asn | Leu | Leu | Arg | Val | Phe | Arg | 335 | 340 | 345 |
| Gln | Val | Glu | Lys | Val | Gln | Glu | Glu | Asn | Lys | Trp | Gln | Ser | Pro | Leu | 350 | 355 | 360 |
| Glu | Asp | Lys | Phe | Pro | Asp | Glu | Gln | Leu | Ser | Ser | Ser | Cys | His | Ser | 365 | 370 | 375 |
| Asp | Leu | Ser | Arg | Leu | Arg | Gln | Arg | Gln | Ser | Leu | Thr | Ser | Gly | Gln | 380 | 385 | 390 |
| Glu | Leu | Thr | Glu | Ile | Pro | Ile | His | Trp | Thr | Ala | Lys | Leu | Pro | Ala | 395 | 400 | 405 |
| Lys | Trp | Ser | Val | Ser | Glu | Ser | Ser | Pro | His | Met | Ala | Pro | Val | Leu | 410 | 415 | 420 |
| Ala | Val | Val | Ala | Thr | Phe | Pro | Val | Leu | Ile | Leu | Trp | Leu | | | 425 | 430 | |

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<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 25
agttctggtc agcctatgtg cc 22

<210> 26
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 26
cgtgatggtg tctttgtcca tggg 24

<210> 27
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 27
ctccaccaat cccgatgaac ttgg 24

<210> 28
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 28
gagcagattg acctcatacg ccgcatgtgt gcctcctatt ctgagctgga 50

<210> 29
<211> 1416
<212> DNA
<213> Homo Sapien

<400> 29
aaaacctata aatattccgg attattcata ccgtcccacc atcgggcgcg 50
gatccgcggc cggaattct aaaccaacat gccgggcacc tacgctccct 100
cgaccacact cagtagtccc agcaccagg gcctgcaaga gcaggcacgg 150
gccctgatgc gggacttccc gctcgtggac ggccacaacg acctgcccct 200
ggtcctaagg caggtttacc agaaagggt acaggatgtt aacctgcgca 250
atttcagcta cggccagacc agcctggaca ggcttagaga tggcctcgtg 300
ggcgcccagt tctggtcagc ctatgtgcca tgccagaccc aggaccggga 350
tgccctgcgc ctcacctgg agcagattga cctcatacgc cgcattgtgtg 400

cctcctattc tgagctggag cttgtgacct cggctaaagc tctgaacgac 450
 actcagaaat tggcctgcct catcggtgta gagggtggcc actcgctgga 500
 caatagcctc tccatcttac gtaccttcta catgctggga gtgcgctacc 550
 tgacgctcac ccacacctgc aacacaccct gggcagagag ctccgctaag 600
 ggcgtccact ccttctacaa caacatcagc gggctgactg actttggtga 650
 gaaggtggtg gcagaaatga accgcctggg catgatggta gacttatccc 700
 atgtctcaga tgctgtggca cggcggggccc tggaagtgtc acaggcacct 750
 gtgatcttct cccactcggc tgcccgggggt gtgtgcaaca gtgctcggaa 800
 tgttctgat gacatcctgc agcttctgaa gaagaacggt ggcgtcgtga 850
 tgggtgtcttt gtccatggga gtaatacagt gcaacccatc agccaatgtg 900
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 ggctggaaga cgtgtccaca taccgggtcc tgatagagga gttgctgagt 1050
 cgtggctgga gtgaggaaga gcttcagggt gtccttcgtg gaaacctgct 1100
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 gcccttgga ggacaagttc ccggtgagc agctgagcag ttccctgccac 1200
 tccgacctct cagctctgcg tcagagacag agtctgactt caggccagga 1250
 actcactgag attcccatc actggacagc caagttacca gccaaagtgg 1300
 cagtctcaga gtctctcccc caccctgaca aaactcacac atgcccaccg 1350
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 aaaaccaag gacacc 1416

<210> 30
 <211> 446
 <212> PRT
 <213> Homo Sapien

<400> 30
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 Thr Gln Gly Leu Gln Glu Gln Ala Arg Ala Leu Met Arg Asp Phe
 20 25 30
 Pro Leu Val Asp Gly His Asn Asp Leu Pro Leu Val Leu Arg Gln
 35 40 45
 Val Tyr Gln Lys Gly Leu Gln Asp Val Asn Leu Arg Asn Phe Ser

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
| | | | | 50 | | | | | 55 | | | | | 60 |
| Tyr | Gly | Gln | Thr | Ser 65 | Leu | Asp | Arg | Leu | Arg 70 | Asp | Gly | Leu | Val | Gly 75 |
| Ala | Gln | Phe | Trp | Ser 80 | Ala | Tyr | Val | Pro | Cys 85 | Gln | Thr | Gln | Asp | Arg 90 |
| Asp | Ala | Leu | Arg | Leu 95 | Thr | Leu | Glu | Gln | Ile 100 | Asp | Leu | Ile | Arg | Arg 105 |
| Met | Cys | Ala | Ser | Tyr 110 | Ser | Glu | Leu | Glu | Leu 115 | Val | Thr | Ser | Ala | Lys 120 |
| Ala | Leu | Asn | Asp | Thr 125 | Gln | Lys | Leu | Ala | Cys 130 | Leu | Ile | Gly | Val | Glu 135 |
| Gly | Gly | His | Ser | Leu 140 | Asp | Asn | Ser | Leu | Ser 145 | Ile | Leu | Arg | Thr | Phe 150 |
| Tyr | Met | Leu | Gly | Val 155 | Arg | Tyr | Leu | Thr | Leu 160 | Thr | His | Thr | Cys | Asn 165 |
| Thr | Pro | Trp | Ala | Glu 170 | Ser | Ser | Ala | Lys | Gly 175 | Val | His | Ser | Phe | Tyr 180 |
| Asn | Asn | Ile | Ser | Gly 185 | Leu | Thr | Asp | Phe | Gly 190 | Glu | Lys | Val | Val | Ala 195 |
| Glu | Met | Asn | Arg | Leu 200 | Gly | Met | Met | Val | Asp 205 | Leu | Ser | His | Val | Ser 210 |
| Asp | Ala | Val | Ala | Arg 215 | Arg | Ala | Leu | Glu | Val 220 | Ser | Gln | Ala | Pro | Val 225 |
| Ile | Phe | Ser | His | Ser 230 | Ala | Ala | Arg | Gly | Val 235 | Cys | Asn | Ser | Ala | Arg 240 |
| Asn | Val | Pro | Asp | Asp 245 | Ile | Leu | Gln | Leu | Leu 250 | Lys | Lys | Asn | Gly | Gly 255 |
| Val | Val | Met | Val | Ser 260 | Leu | Ser | Met | Gly | Val 265 | Ile | Gln | Cys | Asn | Pro 270 |
| Ser | Ala | Asn | Val | Ser 275 | Thr | Val | Ala | Asp | His 280 | Phe | Asp | His | Ile | Lys 285 |
| Ala | Val | Ile | Gly | Ser 290 | Lys | Phe | Ile | Gly | Ile 295 | Gly | Gly | Asp | Tyr | Asp 300 |
| Gly | Ala | Gly | Lys | Phe 305 | Pro | Gln | Gly | Leu | Glu 310 | Asp | Val | Ser | Thr | Tyr 315 |
| Pro | Val | Leu | Ile | Glu 320 | Glu | Leu | Leu | Ser | Arg 325 | Gly | Trp | Ser | Glu | Glu 330 |
| Glu | Leu | Gln | Gly | Val 335 | Leu | Arg | Gly | Asn | Leu 340 | Leu | Arg | Val | Phe | Arg 345 |

| | | | |
|---|-----|-----|-----|
| Gln Val Glu Lys Val Gln Glu Glu Asn Lys Trp Gln Ser Pro Leu | 350 | 355 | 360 |
| Glu Asp Lys Phe Pro Asp Glu Gln Leu Ser Ser Ser Cys His Ser | 365 | 370 | 375 |
| Asp Leu Ser Arg Leu Arg Gln Arg Gln Ser Leu Thr Ser Gly Gln | 380 | 385 | 390 |
| Glu Leu Thr Glu Ile Pro Ile His Trp Thr Ala Lys Leu Pro Ala | 395 | 400 | 405 |
| Lys Trp Ser Val Ser Glu Ser Ser Pro His Pro Asp Lys Thr His | 410 | 415 | 420 |
| Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser | 425 | 430 | 435 |
| Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr | 440 | 445 | |

<210> 31
 <211> 1790
 <212> DNA
 <213> Homo Sapien

<400> 31
 cgcccagcga cgtgcggggcg gectggcccg cgccctcccg cgcccggcct 50
 ggcgtcccgcg cctgcgcca ccgcgcgcca gccgcagccc gccgcgcgcc 100
 ccgggcagcg ccggcccccatt gccgcgcggc cgccgggggcc ccgcgcgcca 150
 atccgcgcgg cggcgcgcgc cgttgctgcc cctgctgctg ctgctctgcg 200
 tccctggggc gccgcgagcc ggatcaggag cccacacagc tgtgatcagt 250
 ccccaggatc ccacgcttct catcggtctc tccctgctgg ccacctgctc 300
 agtgcaaggga gaccaccag gagccaccgc cgaggggctc tactggacct 350
 tcaacggggc ccgcctgccc cctgagctct cccgtgtact caacgcctcc 400
 accttggtc tggccctggc caacctcaat ggggtccaggc agcgggtcggg 450
 ggacaacctc gtgtgccacg cccgtgacgg cagcatcctg gctggctcct 500
 gcctctatgt tggcctgccc ccagagaaac ccgtcaacat cagctgctgg 550
 tccaagaaca tgaaggactt gacctgccgc tggacgccag gggcccacgg 600
 ggagaccttc ctccacacca actactccct caagtacaag cttaggtggg 650
 atggccagga caacacatgt gaggagtacc acacagtggg gcccactcc 700
 tgccacatcc ccaaggacct ggctctcttt acgccctatg agatctgggt 750
 ggaggccacc aaccgcctgg gctctgcccg ctccgatgta ctcacgctgg 800

| | | | | | |
|--------------|-------------|-------------|------------|-------------|------|
| atatccttggga | tgtggtgacc | acggaccccc | cgcccgacgt | gcacgtgagc | 850 |
| cgcgtcgggg | gcctggagga | ccagctgagc | gtgcgctggg | tgtgccacc | 900 |
| cgccctcaag | gatttcctct | ttcaagccaa | ataccagatc | cgctaccgag | 950 |
| tggaggacag | tgtggactgg | aaggtggtgg | acgatgtgag | caaccagacc | 1000 |
| tcttgcggcc | tggccggcct | gaaacccggc | accgtgtact | tcggtgcaagt | 1050 |
| gcgctgcaac | ccctttggca | tctatggctc | caagaaagcc | gggatctgga | 1100 |
| gtgagtggag | ccaccccaca | gccgcctcca | ctccccgcag | tgagcgcccg | 1150 |
| ggcccggggc | gcggggcgctg | cgaaccgcgg | ggcggagagc | cgagctcggg | 1200 |
| gccggtgcgg | cgcgagctca | agcagttcct | gggctggctc | aagaagcacg | 1250 |
| cgtactgctc | caacctcagc | ttccgcctct | acgaccagt | gcgagcctgg | 1300 |
| atgcagaagt | cgcacaagac | ccgcaaccag | gacgagggga | tcttgccttc | 1350 |
| gggcagacgg | ggcacggcga | gaggtcctgc | cagataagct | gtaggggctc | 1400 |
| aggccacctt | ccctgccacg | tggagacgca | gaggccgaac | ccaaactggg | 1450 |
| gccacctctg | tacctctact | tcagggcacc | tgagccaccc | tcagcaggag | 1500 |
| ctgggggtggc | ccctgagctc | caacggccat | aacagctctg | actcccacgt | 1550 |
| gaggccacct | ttgggtgcac | cccagtgggt | gtgtgtgtgt | gtgtgagggt | 1600 |
| tggttgagtt | gcctagaacc | cctgccaggg | ctgggggtga | gaagggggagt | 1650 |
| cattactccc | cattacctag | ggccccctcca | aaagagtcct | tttaaataaaa | 1700 |
| tgagctattt | aggtgctgtg | attgtgaaaa | aaaaaaaaaa | aaaaaaaaaa | 1750 |
| aaaaaaaaaa | aaaaaaaaaa | aaaaacaaaa | aaaaaaaaaa | 1790 | |

<210> 32

<400> 32

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|
| Ser | Val | His | Gly | Asp 65 | Pro | Pro | Gly | Ala | Thr 70 | Ala | Glu | Gly | Leu | Tyr 75 |
| Trp | Thr | Leu | Asn | Gly 80 | Arg | Arg | Leu | Pro | Pro 85 | Glu | Leu | Ser | Arg | Val 90 |
| Leu | Asn | Ala | Ser | Thr 95 | Leu | Ala | Leu | Ala | Leu 100 | Ala | Asn | Leu | Asn | Gly 105 |
| Ser | Arg | Gln | Arg | Ser 110 | Gly | Asp | Asn | Leu | Val 115 | Cys | His | Ala | Arg | Asp 120 |
| Gly | Ser | Ile | Leu | Ala 125 | Gly | Ser | Cys | Leu | Tyr 130 | Val | Gly | Leu | Pro | Pro 135 |
| Glu | Lys | Pro | Val | Asn 140 | Ile | Ser | Cys | Trp | Ser 145 | Lys | Asn | Met | Lys | Asp 150 |
| Leu | Thr | Cys | Arg | Trp 155 | Thr | Pro | Gly | Ala | His 160 | Gly | Glu | Thr | Phe | Leu 165 |
| His | Thr | Asn | Tyr | Ser 170 | Leu | Lys | Tyr | Lys | Leu 175 | Arg | Trp | Tyr | Gly | Gln 180 |
| Asp | Asn | Thr | Cys | Glu 185 | Glu | Tyr | His | Thr | Val 190 | Gly | Pro | His | Ser | Cys 195 |
| His | Ile | Pro | Lys | Asp 200 | Leu | Ala | Leu | Phe | Thr 205 | Pro | Tyr | Glu | Ile | Trp 210 |
| Val | Glu | Ala | Thr | Asn 215 | Arg | Leu | Gly | Ser | Ala 220 | Arg | Ser | Asp | Val | Leu 225 |
| Thr | Leu | Asp | Ile | Leu 230 | Asp | Val | Val | Thr | Thr 235 | Asp | Pro | Pro | Pro | Asp 240 |
| Val | His | Val | Ser | Arg 245 | Val | Gly | Gly | Leu | Glu 250 | Asp | Gln | Leu | Ser | Val 255 |
| Arg | Trp | Val | Ser | Pro 260 | Pro | Ala | Leu | Lys | Asp 265 | Phe | Leu | Phe | Gln | Ala 270 |
| Lys | Tyr | Gln | Ile | Arg 275 | Tyr | Arg | Val | Glu | Asp 280 | Ser | Val | Asp | Trp | Lys 285 |
| Val | Val | Asp | Asp | Val 290 | Ser | Asn | Gln | Thr | Ser 295 | Cys | Arg | Leu | Ala | Gly 300 |
| Leu | Lys | Pro | Gly | Thr 305 | Val | Tyr | Phe | Val | Gln 310 | Val | Arg | Cys | Asn | Pro 315 |
| Phe | Gly | Ile | Tyr | Gly 320 | Ser | Lys | Lys | Ala | Gly 325 | Ile | Trp | Ser | Glu | Trp 330 |
| Ser | His | Pro | Thr | Ala 335 | Ala | Ser | Thr | Pro | Arg 340 | Ser | Glu | Arg | Pro | Gly 345 |
| Pro | Gly | Gly | Gly | Ala | Cys | Glu | Pro | Arg | Gly | Gly | Glu | Pro | Ser | Ser |

| | | |
|---|-----|-----|
| 350 | 355 | 360 |
| Gly Pro Val Arg Arg Glu Leu Lys Gln Phe Leu Gly Trp Leu Lys | | |
| 365 | 370 | 375 |
| Lys His Ala Tyr Cys Ser Asn Leu Ser Phe Arg Leu Tyr Asp Gln | | |
| 380 | 385 | 390 |
| Trp Arg Ala Trp Met Gln Lys Ser His Lys Thr Arg Asn Gln Asp | | |
| 395 | 400 | 405 |
| Glu Gly Ile Leu Pro Ser Gly Arg Arg Gly Thr Ala Arg Gly Pro | | |
| 410 | 415 | 420 |
| Ala Arg | | |

<210> 33
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide probe

<400> 33
 cccgcccgcac gtgcacgtga gcc 23

<210> 34
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide probe

<400> 34
 tgagccagcc caggaactgc ttg 23

<210> 35
 <211> 50
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic oligonucleotide probe

<400> 35
 caagtgcgct gcaaccctt tggcatctat ggctccaaga aagccgggat 50

<210> 36
 <211> 1771
 <212> DNA
 <213> Homo Sapien

<400> 36
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agtggtaaaa aaaaaaaaaa acacaccaaaa cgctcgcagc cacaaaaggg 100
 atgaaatttc ttctggacat cctcctgctt ctcccgttac tgatcgtctg 150
 ctccctagag tccttcgtga agctttttat tcctaagagg agaaaatcag 200
 tcaccggcga aatcgtgctg attacaggag ctgggcatgg aattgggaga 250
 ctgactgcct atgaatttgc taaacttaaa agcaagctgg ttctctggga 300
 tataaataag catggactgg aggaaacagc tgccaaatgc aagggactgg 350
 gtgccaaggt tcataccttt gtggtagact gcagcaaccg agaagatatt 400
 tacagctctg caaagaaggt gaaggcagaa attggagatg ttagtatttt 450
 agtaaataat gctggtgtag tctatacatc agatttgttt gctacacaag 500
 atcctcagat tgaaaagact tttgaagtta atgtacttgc acatttctgg 550
 actacaaagg catttcttcc tgcaatgacg aagaataacc atggccatat 600
 tgtcactgtg gcttcggcag ctggacatgt ctcggtcccc ttcttactgg 650
 cttactgttc aagcaagttt gctgctgttg gatttcataa aactttgaca 700
 gatgaactgg ctgccttaca aataactgga gtcaaaacaa catgtctgtg 750
 tcctaatttc gtaaacactg gcttcatcaa aaatccaagt acaagtttgg 800
 gaccactctt ggaacctgag gaagtggtaa acaggctgat gcacgggatt 850
 ctgactgagc agaagatgat ttttattcca tcttctatag cttttttaac 900
 aacattggaa aggatccttc ctgagcgttt cctggcagtt ttaaaacgaa 950
 aaatcagtgt taagtttgat gcagttattg gatataaaat gaaagcgcaa 1000
 taagcaccta gttttctgaa aactgattta ccaggtttag gttgatgtca 1050
 tctaatagtg ccagaatttt aatgtttgaa cttctgtttt ttctaattat 1100
 cccattttct tcaatatcat ttttgaggct ttggcagtct tcatttacta 1150
 ccacttggtc tttagccaaa agctgattac atatgatata aacagagaaa 1200
 tacctttaga ggtgacttta aggaaaatga agaaaaagaa ccaaaatgac 1250
 tttattaaaa taatttccaa gattatttgt ggctcacctg aaggctttgc 1300
 aaaatttgta ccataaccgt ttatttaaca tatattttta tttttgattg 1350
 cacttaaaatt ttgtataatt tgtgtttctt tttctgttct acataaaatc 1400
 agaaacttca agctctctaa ataaaatgaa ggactatata tagtggtatt 1450
 tcacaatgaa tatcatgaac tctcaatggg taggtttcat cctaccatt 1500

[illegible]

<400> 37

32

TOP SECRET 42344650

| 200 | 205 | 210 |
|---|-----|-----|
| Val Lys Thr Thr Cys Leu Cys Pro Asn Phe Val Asn Thr Gly Phe | | |
| 215 | 220 | 225 |
| Ile Lys Asn Pro Ser Thr Ser Leu Gly Pro Thr Leu Glu Pro Glu | | |
| 230 | 235 | 240 |
| Glu Val Val Asn Arg Leu Met His Gly Ile Leu Thr Glu Gln Lys | | |
| 245 | 250 | 255 |
| Met Ile Phe Ile Pro Ser Ser Ile Ala Phe Leu Thr Thr Leu Glu | | |
| 260 | 265 | 270 |
| Arg Ile Leu Pro Glu Arg Phe Leu Ala Val Leu Lys Arg Lys Ile | | |
| 275 | 280 | 285 |
| Ser Val Lys Phe Asp Ala Val Ile Gly Tyr Lys Met Lys Ala Gln | | |
| 290 | 295 | 300 |

<210> 38
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 38
ggtgaaggca gaaattggag atg 23

<210> 39
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 39
atcccatgca tcagcctggt tacc 24

<210> 40
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 40
gctggtgtag tctatacatc agatttggtt gctacacaag atcctcag 48

<210> 41
<211> 1377
<212> DNA
<213> Homo Sapien



<400> 41

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gcgcgggggc tggagcacca ccaactggag ggtccggagt agcgagcgcc 150
ccgaaggagg ccatcgggga gccgggaggg gggactgcga gaggaccccg 200
gcgtccgggc tcccggtgcc agcgctatga ggccactcct cgtcctgctg 250
ctcctggggc tggcgggcgg ctgccccca ctggacgaca acaagatccc 300
cagcctctgc cgggggcacc cgggccttcc aggcacgccg ggccaccatg 350
gcagccaggg cttgccgggc cgcgatggcc gcgacggccg cgacggcgcg 400
cccggggctc cgggagagaa aggcgagggc gggaggccgg gactgccggg 450
acctcgaggg gaccccgggc cgcgaggaga ggcgggaccc gcggggccca 500
ccgggcctgc cggggagtgc tcggtgcctc cgcgatccgc cttcagcgcc 550
aagcgctccg agagccgggt gectccgccg tctgacgcac ccttgccctt 600
cgaccgcgtg ctggtgaacg agcagggaca ttacgacgcc gtcaccggca 650
agttcacctg ccagggtgect ggggtctact acttcgccgt ccatgccacc 700
gtctaccggg ccagcctgca gtttgatctg gtgaagaatg gcgaatccat 750
tgectcttct ttccagtttt tcgggggggtg gccaagcca gcctcgctct 800
cggggggggc catggtgagg ctggagcctg aggaccaagt gtgggtgcag 850
gtgggtgtgg gtgactacat tggcatctat gccagcatca agacagacag 900
caccttctcc ggatttctgg tgtactccga ctggcacagc tccccagtct 950
ttgcttagtg cccactgcaa agtgagctca tgctctcact cctagaagga 1000
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aaaaaaaaa aaaaaaaaaa aaaaaaa 1377

<210> 42

<211> 243
 <212> PRT
 <213> Homo Sapien

<400> 42

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Met | Arg | Pro | Leu | Leu | Val | Leu | Leu | Leu | Leu | Gly | Leu | Ala | Ala | Gly | 1 | 5 | 10 | 15 |
| Ser | Pro | Pro | Leu | Asp | Asn | Lys | Ile | Pro | Ser | Leu | Cys | Pro | Gly | 20 | 25 | 30 | | |
| His | Pro | Gly | Leu | Pro | Gly | Thr | Pro | Gly | His | His | Gly | Ser | Gln | Gly | 35 | 40 | 45 | |
| Leu | Pro | Gly | Arg | Asp | Gly | Arg | Asp | Gly | Arg | Asp | Gly | Ala | Pro | Gly | 50 | 55 | 60 | |
| Ala | Pro | Gly | Glu | Lys | Gly | Glu | Gly | Gly | Arg | Pro | Gly | Leu | Pro | Gly | 65 | 70 | 75 | |
| Pro | Arg | Gly | Asp | Pro | Gly | Pro | Arg | Gly | Glu | Ala | Gly | Pro | Ala | Gly | 80 | 85 | 90 | |
| Pro | Thr | Gly | Pro | Ala | Gly | Glu | Cys | Ser | Val | Pro | Pro | Arg | Ser | Ala | 95 | 100 | 105 | |
| Phe | Ser | Ala | Lys | Arg | Ser | Glu | Ser | Arg | Val | Pro | Pro | Pro | Ser | Asp | 110 | 115 | 120 | |
| Ala | Pro | Leu | Pro | Phe | Asp | Arg | Val | Leu | Val | Asn | Glu | Gln | Gly | His | 125 | 130 | 135 | |
| Tyr | Asp | Ala | Val | Thr | Gly | Lys | Phe | Thr | Cys | Gln | Val | Pro | Gly | Val | 140 | 145 | 150 | |
| Tyr | Tyr | Phe | Ala | Val | His | Ala | Thr | Val | Tyr | Arg | Ala | Ser | Leu | Gln | 155 | 160 | 165 | |
| Phe | Asp | Leu | Val | Lys | Asn | Gly | Glu | Ser | Ile | Ala | Ser | Phe | Phe | Gln | 170 | 175 | 180 | |
| Phe | Phe | Gly | Gly | Trp | Pro | Lys | Pro | Ala | Ser | Leu | Ser | Gly | Gly | Ala | 185 | 190 | 195 | |
| Met | Val | Arg | Leu | Glu | Pro | Glu | Asp | Gln | Val | Trp | Val | Gln | Val | Gly | 200 | 205 | 210 | |
| Val | Gly | Asp | Tyr | Ile | Gly | Ile | Tyr | Ala | Ser | Ile | Lys | Thr | Asp | Ser | 215 | 220 | 225 | |
| Thr | Phe | Ser | Gly | Phe | Leu | Val | Tyr | Ser | Asp | Trp | His | Ser | Ser | Pro | 230 | 235 | 240 | |
| Val | Phe | Ala | | | | | | | | | | | | | | | | |

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 <211> 24

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 43
 tacaggccca gtcaggacca gggg 24

 <210> 44
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 <212> DNA
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 <220>
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 <400> 44
 agccagcctc gctctcgg 18

 <210> 45
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 <400> 45
 gtctgcatc aggtctgg 18

 <210> 46
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 46
 gaaagaggca atggattcgc 20

 <210> 47
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 47
 gacttacact tgccagcaca gcac 24

 <210> 48
 <211> 45
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 48

ggagcaccac caactggagg gtccggagta gcgagcgccc cgaag 45

<210> 49

<211> 1876

<212> DNA

<213> Homo Sapien

<400> 49

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atccagcctg agaaacaagc cgggtggctg agccaggctg tgcacggagc 100
acctgacggg cccaacagac ccatgctgca tccagagacc tcccctggcc 150
gggggcatct cctggctgtg ctectggccc tccttggcac cacctgggca 200
gaggtgtggc caccacagct gcaggagcag gctccgatgg ccggagccct 250
gaacaggaag gagagtttct tgtctctctc cctgcacaac cgcttgcgca 300
gctgggtcca gcccctgcg gctgacatgc ggaggctgga ctggagtgc 350
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cccgagcctg gcatccggcc tgtggcgcac cctgcaagtg ggctggaaca 450
tgcagctgct gcccgcgggc ttggcgctct ttgttgaagt ggtcagccta 500
tggtttgcag aggggcagcg gtacagccac gcggcaggag agtgtgctcg 550
caacgccacc tgcaccaact acacgcagct cgtgtggggc acctcaagcc 600
agctgggctg tgggcggcac ctgtgctctg caggccagac agcgatagaa 650
gcctttgtct gtgctactc ccccgaggc aactgggagg tcaacgggaa 700
gacaatcatc cctataaga agggtgctg gtgttcgctc tgcacagcca 750
gtgtctcagg ctgcttcaa gctgggacc atgcaggggg gctctgtgag 800
gtccccagga atccttgtcg catgagctgc cagaacctg gacgtctcaa 850
catcagcacc tgccactgcc actgtccccc tggctacacg ggcagatact 900
gccaaagtgc gtgcagcctg cagtgtgtgc acggccggtt ccgggaggag 950
gagtgtctgt gcgtctgtga catcggttac gggggagccc agtgtgccac 1000
caaggtgcat ttcccttcc acacctgtga cctgaggatc gacggagact 1050
gcttcattgt gtcttcagag gcagacacct attacagagc caggatgaaa 1100
tgtcagagga aaggcggggt gctggccccag atcaagagcc agaaagtgc 1150

ggacatcctc gccttctatc tgggccgcct ggagaccacc aacgaggtga 1200
 ctgacagtga cttcgagacc aggaacttct ggatcgggct cacctacaag 1250
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 catggtctcc tcgcctgccc tgggagcacc ggctctgctt acctgtctgc 1550
 ccacctgtct ggaacaaggg ccaggttaag accacatgcc tcatgtccaa 1600
 agaggtctca gaccttgac aatgccagaa gttgggcaga gagaggcagg 1650
 gaggccagtg agggccaggg agtgagtgtt agaagaagct ggggcccttc 1700
 gcctgctttt gattgggaag atgggcttca attagatggc gaaggagagg 1750
 acaccgccag tgggtccaaa aggctgctct cttccacctg gccagaccc 1800
 tgtggggcag cggagcttcc ctgtggcatg aacccacagg ggtattaaat 1850
 tatgaatcag ctgaaaaaaaa aaaaaa 1876

<210> 50

<211> 455

<212> PRT

<213> Homo Sapien

<400> 50

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Leu | His | Pro | Glu | Thr | Ser | Pro | Gly | Arg | Gly | His | Leu | Leu | Ala |
| 1 | | | | 5 | | | | 10 | | | | | | 15 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Leu | Leu | Ala | Leu | Leu | Gly | Thr | Thr | Trp | Ala | Glu | Val | Trp | Pro |
| | | | 20 | | | | | | 25 | | | | | 30 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gln | Leu | Gln | Glu | Gln | Ala | Pro | Met | Ala | Gly | Ala | Leu | Asn | Arg |
| | | | 35 | | | | | | 40 | | | | | 45 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Glu | Ser | Phe | Leu | Leu | Leu | Ser | Leu | His | Asn | Arg | Leu | Arg | Ser |
| | | | 50 | | | | | | 55 | | | | | 60 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Val | Gln | Pro | Pro | Ala | Ala | Asp | Met | Arg | Arg | Leu | Asp | Trp | Ser |
| | | | 65 | | | | | | 70 | | | | | 75 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ser | Leu | Ala | Gln | Leu | Ala | Gln | Ala | Arg | Ala | Ala | Leu | Cys | Gly |
| | | | 80 | | | | | | 85 | | | | | 90 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Pro | Thr | Pro | Ser | Leu | Ala | Ser | Gly | Leu | Trp | Arg | Thr | Leu | Gln |
| | | | 95 | | | | | | 100 | | | | | 105 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Gly | Trp | Asn | Met | Gln | Leu | Leu | Pro | Ala | Gly | Leu | Ala | Ser | Phe |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| 110 | | | | | | | | | | 115 | | | | | 120 | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| Val | Glu | Val | Val | Ser | Leu | Trp | Phe | Ala | Glu | Gly | Gln | Arg | Tyr | Ser | | | | | |
| | | | | 125 | | | | | 130 | | | | | 135 | | | | | |
| His | Ala | Ala | Gly | Glu | Cys | Ala | Arg | Asn | Ala | Thr | Cys | Thr | His | Tyr | | | | | |
| | | | | 140 | | | | | 145 | | | | | 150 | | | | | |
| Thr | Gln | Leu | Val | Trp | Ala | Thr | Ser | Ser | Gln | Leu | Gly | Cys | Gly | Arg | | | | | |
| | | | | 155 | | | | | 160 | | | | | 165 | | | | | |
| His | Leu | Cys | Ser | Ala | Gly | Gln | Thr | Ala | Ile | Glu | Ala | Phe | Val | Cys | | | | | |
| | | | | 170 | | | | | 175 | | | | | 180 | | | | | |
| Ala | Tyr | Ser | Pro | Gly | Gly | Asn | Trp | Glu | Val | Asn | Gly | Lys | Thr | Ile | | | | | |
| | | | | 185 | | | | | 190 | | | | | 195 | | | | | |
| Ile | Pro | Tyr | Lys | Lys | Gly | Ala | Trp | Cys | Ser | Leu | Cys | Thr | Ala | Ser | | | | | |
| | | | | 200 | | | | | 205 | | | | | 210 | | | | | |
| Val | Ser | Gly | Cys | Phe | Lys | Ala | Trp | Asp | His | Ala | Gly | Gly | Leu | Cys | | | | | |
| | | | | 215 | | | | | 220 | | | | | 225 | | | | | |
| Glu | Val | Pro | Arg | Asn | Pro | Cys | Arg | Met | Ser | Cys | Gln | Asn | His | Gly | | | | | |
| | | | | 230 | | | | | 235 | | | | | 240 | | | | | |
| Arg | Leu | Asn | Ile | Ser | Thr | Cys | His | Cys | His | Cys | Pro | Pro | Gly | Tyr | | | | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | | | |
| Thr | Gly | Arg | Tyr | Cys | Gln | Val | Arg | Cys | Ser | Leu | Gln | Cys | Val | His | | | | | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | | | |
| Gly | Arg | Phe | Arg | Glu | Glu | Glu | Cys | Ser | Cys | Val | Cys | Asp | Ile | Gly | | | | | |
| | | | | 275 | | | | | 280 | | | | | 285 | | | | | |
| Tyr | Gly | Gly | Ala | Gln | Cys | Ala | Thr | Lys | Val | His | Phe | Pro | Phe | His | | | | | |
| | | | | 290 | | | | | 295 | | | | | 300 | | | | | |
| Thr | Cys | Asp | Leu | Arg | Ile | Asp | Gly | Asp | Cys | Phe | Met | Val | Ser | Ser | | | | | |
| | | | | 305 | | | | | 310 | | | | | 315 | | | | | |
| Glu | Ala | Asp | Thr | Tyr | Tyr | Arg | Ala | Arg | Met | Lys | Cys | Gln | Arg | Lys | | | | | |
| | | | | 320 | | | | | 325 | | | | | 330 | | | | | |
| Gly | Gly | Val | Leu | Ala | Gln | Ile | Lys | Ser | Gln | Lys | Val | Gln | Asp | Ile | | | | | |
| | | | | 335 | | | | | 340 | | | | | 345 | | | | | |
| Leu | Ala | Phe | Tyr | Leu | Gly | Arg | Leu | Glu | Thr | Thr | Asn | Glu | Val | Thr | | | | | |
| | | | | 350 | | | | | 355 | | | | | 360 | | | | | |
| Asp | Ser | Asp | Phe | Glu | Thr | Arg | Asn | Phe | Trp | Ile | Gly | Leu | Thr | Tyr | | | | | |
| | | | | 365 | | | | | 370 | | | | | 375 | | | | | |
| Lys | Thr | Ala | Lys | Asp | Ser | Phe | Arg | Trp | Ala | Thr | Gly | Glu | His | Gln | | | | | |
| | | | | 380 | | | | | 385 | | | | | 390 | | | | | |
| Ala | Phe | Thr | Ser | Phe | Ala | Phe | Gly | Gln | Pro | Asp | Asn | His | Gly | Leu | | | | | |
| | | | | 395 | | | | | 400 | | | | | 405 | | | | | |

Val Trp Leu Ser Ala Ala Met Gly Phe Gly Asn Cys Val Glu Leu
410 415 420

Gln Ala Ser Ala Ala Phe Asn Trp Asn Asp Gln Arg Cys Lys Thr
425 430 435

Arg Asn Arg Tyr Ile Cys Gln Phe Ala Gln Glu His Ile Ser Arg
440 445 450

Trp Gly Pro Gly Ser
455

<210> 51
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 51
aggaacttct ggatcgggct cacc 24

<210> 52
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 52
gggtctgggc caggtggaag agag 24

<210> 53
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 53
gccaaggact ccttccgctg ggccacaggg gagcaccagg ccttc 45

<210> 54
<211> 2331
<212> DNA
<213> Homo Sapien

<400> 54
cggacgcgtg ggctgggcgc tgcaaagcgt gtcccgccgg gtccccgagc 50
gtcccgccgc ctgcgccgc catgctcctg ctgctggggc tgtgcctggg 100
gctgtccctg tgtgtggggt cgcaggaaga ggcgagagc tggggccact 150
cttcggagca ggatggactc aggggtcccga ggcaagtcag actgttgcag 200

aggctgaaaa ccaaaccctt gatgacagaa ttctcagtga agtctacat 250
catttcccggt tatgccttca ctacgggttc ctgcagaatg ctgaacagag 300
cttctgaaga ccaggacatt gagttccaga tgcagattcc agctgcagct 350
ttcatcacca acttcactat gcttattgga gacaagggtgt atcagggcga 400
aattacagag agagaaaaga agagtgggtga tagggtaaaa gagaaaagga 450
ataaaaccac agaagaaaat ggagagaagg ggactgaaat attcagagct 500
tctgcagtga ttcccagcaa ggacaaagcc gcctttttcc tgagttatga 550
ggagcttctg cagaggcgcc tgggcaagta cgagcacagc atcagcgtgc 600
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agcgcgggca tcgcatccct ggaggtgctg ccgcttcaca acagcaggca 700
gaggggcagt gggcgcgggg aagatgattc tgggcctccc ccatctactg 750
tcattaacca aaatgaaaca ttgccaaca taatttttaa acctactgta 800
gtacaacaag ccaggattgc ccagaatgga attttgggag actttatcat 850
tagatatgac gtcaatagag aacagagcat tggggacatc caggttctaa 900
atggctatct tgtgcactac ttgtctcta aagaccttc tcttttacc 950
aagaatgtgg tattcgtgct tgacagcagt gcttctatgg tgggaaccaa 1000
actccggcag accaaggatg ccctcttcac aattctccat gacctccgac 1050
cccaggaccg ttctcagtac attggatttt ccaaccggat caaagtatgg 1100
aaggaccact tgatatcagt cactccagac agcatcaggg atgggaaagt 1150
gtacattcac catatgtcac ccactggagg cacagacatc aacggggccc 1200
tgcagagggc catcaggctc ctcaacaagt acgtggccca cagtggcatt 1250
ggagaccgga gcgtgtccct catcgtcttc ctgacggatg ggaagcccac 1300
ggtcggggag acgcacaccc tcaagatcct caacaacacc cgagaggccg 1350
cccgaggcca agtctgcac ttaccattg gcacgggcaa cgacgtggac 1400
ttcaggctgc tggagaaact gtcgctggag aactgtggcc tcacacggcg 1450
cgtgcacgag gaggaggacg caggctcgca gctcatcggg ttctacgatg 1500
aaatcaggac cccgctctc tctgacatcc gcacgatta tccccccagc 1550
tcagtgggtg aggccaccaa gacctgttc cccaactact tcaacggctc 1600
ggagatcatc attgcgggga agctgggtgga caggaagctg gatcacctgc 1650

| Author | Year | Country | Sample Size | Age Range | Gender | Study Type | Findings |
|----------------|------|-------------|-------------|-----------|--------|------------|-----------------------------------|
| Wright et al. | 1990 | USA | 1,000 | 18-25 | Male | Survey | High levels of stress and anxiety |
| Smith et al. | 1992 | UK | 500 | 26-35 | Female | Survey | Increased levels of depression |
| Johnson et al. | 1995 | Canada | 2,000 | 19-30 | Male | Survey | Significant increase in stress |
| Lee et al. | 1998 | South Korea | 1,500 | 20-30 | Male | Survey | High levels of anxiety and stress |
| Kim et al. | 2000 | South Korea | 1,000 | 21-30 | Female | Survey | Increased levels of depression |
| Chen et al. | 2002 | Taiwan | 1,200 | 22-31 | Male | Survey | Significant increase in stress |
| Wang et al. | 2004 | China | 1,800 | 23-32 | Male | Survey | High levels of anxiety and stress |
| Zhang et al. | 2006 | China | 1,600 | 24-33 | Female | Survey | Increased levels of depression |
| Liu et al. | 2008 | China | 1,400 | 25-34 | Male | Survey | Significant increase in stress |
| Li et al. | 2010 | China | 1,700 | 26-35 | Female | Survey | High levels of anxiety and stress |
| Chen et al. | 2012 | China | 1,900 | 27-36 | Male | Survey | Increased levels of depression |
| Wang et al. | 2014 | China | 2,100 | 28-37 | Female | Survey | Significant increase in stress |
| Zhang et al. | 2016 | China | 2,300 | 29-38 | Male | Survey | High levels of anxiety and stress |
| Liu et al. | 2018 | China | 2,500 | 30-39 | Female | Survey | Increased levels of depression |
| Li et al. | 2020 | China | 2,700 | 31-40 | Male | Survey | Significant increase in stress |

<211> 694

<213> Homo Sapien

Met Leu Leu Leu Leu Gly Leu Cys Leu Gly Leu Ser Leu Cys Val
1 5 10 15

Gly Ser Gln Glu Glu Ala Gln Ser Trp Gly His Ser Ser Glu Gln
20 25 30

Asp Gly Leu Arg Val Pro Arg Gln Val Arg Leu Leu Gln Arg Leu
35 40 45

Lys Thr Lys Pro Leu Met Thr Glu Phe Ser Val Lys Ser Thr Ile
50 55 60

Ile Ser Arg Tyr Ala Phe Thr Thr Val Ser Cys Arg Met Leu Asn
65 70 75

Arg Ala Ser Glu Asp Gln Asp Ile Glu Phe Gln Met Gln Ile Pro
80 85 90

Ala Ala Ala Phe Ile Thr Asn Phe Thr Met Leu Ile Gly Asp Lys
95 100 105

Val Tyr Gln Gly Glu Ile Thr Glu Arg Glu Lys Lys Ser Gly Asp
110 115 120

| | | | |
|---|-----|-----|-----|
| Arg Val Lys Glu Lys Arg Asn Lys Thr Thr Glu Glu Asn Gly Glu | 125 | 130 | 135 |
| Lys Gly Thr Glu Ile Phe Arg Ala Ser Ala Val Ile Pro Ser Lys | 140 | 145 | 150 |
| Asp Lys Ala Ala Phe Phe Leu Ser Tyr Glu Glu Leu Leu Gln Arg | 155 | 160 | 165 |
| Arg Leu Gly Lys Tyr Glu His Ser Ile Ser Val Arg Pro Gln Gln | 170 | 175 | 180 |
| Leu Ser Gly Arg Leu Ser Val Asp Val Asn Ile Leu Glu Ser Ala | 185 | 190 | 195 |
| Gly Ile Ala Ser Leu Glu Val Leu Pro Leu His Asn Ser Arg Gln | 200 | 205 | 210 |
| Arg Gly Ser Gly Arg Gly Glu Asp Asp Ser Gly Pro Pro Pro Ser | 215 | 220 | 225 |
| Thr Val Ile Asn Gln Asn Glu Thr Phe Ala Asn Ile Ile Phe Lys | 230 | 235 | 240 |
| Pro Thr Val Val Gln Gln Ala Arg Ile Ala Gln Asn Gly Ile Leu | 245 | 250 | 255 |
| Gly Asp Phe Ile Ile Arg Tyr Asp Val Asn Arg Glu Gln Ser Ile | 260 | 265 | 270 |
| Gly Asp Ile Gln Val Leu Asn Gly Tyr Phe Val His Tyr Phe Ala | 275 | 280 | 285 |
| Pro Lys Asp Leu Pro Pro Leu Pro Lys Asn Val Val Phe Val Leu | 290 | 295 | 300 |
| Asp Ser Ser Ala Ser Met Val Gly Thr Lys Leu Arg Gln Thr Lys | 305 | 310 | 315 |
| Asp Ala Leu Phe Thr Ile Leu His Asp Leu Arg Pro Gln Asp Arg | 320 | 325 | 330 |
| Phe Ser Ile Ile Gly Phe Ser Asn Arg Ile Lys Val Trp Lys Asp | 335 | 340 | 345 |
| His Leu Ile Ser Val Thr Pro Asp Ser Ile Arg Asp Gly Lys Val | 350 | 355 | 360 |
| Tyr Ile His His Met Ser Pro Thr Gly Gly Thr Asp Ile Asn Gly | 365 | 370 | 375 |
| Ala Leu Gln Arg Ala Ile Arg Leu Leu Asn Lys Tyr Val Ala His | 380 | 385 | 390 |
| Ser Gly Ile Gly Asp Arg Ser Val Ser Leu Ile Val Phe Leu Thr | 395 | 400 | 405 |
| Asp Gly Lys Pro Thr Val Gly Glu Thr His Thr Leu Lys Ile Leu | | | |

| | | |
|---|-----|-----|
| 410 | 415 | 420 |
| Asn Asn Thr Arg Glu Ala Ala Arg Gly Gln Val Cys Ile Phe Thr | | |
| 425 | 430 | 435 |
| Ile Gly Ile Gly Asn Asp Val Asp Phe Arg Leu Leu Glu Lys Leu | | |
| 440 | 445 | 450 |
| Ser Leu Glu Asn Cys Gly Leu Thr Arg Arg Val His Glu Glu Glu | | |
| 455 | 460 | 465 |
| Asp Ala Gly Ser Gln Leu Ile Gly Phe Tyr Asp Glu Ile Arg Thr | | |
| 470 | 475 | 480 |
| Pro Leu Leu Ser Asp Ile Arg Ile Asp Tyr Pro Pro Ser Ser Val | | |
| 485 | 490 | 495 |
| Val Gln Ala Thr Lys Thr Leu Phe Pro Asn Tyr Phe Asn Gly Ser | | |
| 500 | 505 | 510 |
| Glu Ile Ile Ile Ala Gly Lys Leu Val Asp Arg Lys Leu Asp His | | |
| 515 | 520 | 525 |
| Leu His Val Glu Val Thr Ala Ser Asn Ser Lys Lys Phe Ile Ile | | |
| 530 | 535 | 540 |
| Leu Lys Thr Asp Val Pro Val Arg Pro Gln Lys Ala Gly Lys Asp | | |
| 545 | 550 | 555 |
| Val Thr Gly Ser Pro Arg Pro Gly Gly Asp Gly Glu Gly Asp Thr | | |
| 560 | 565 | 570 |
| Asn His Ile Glu Arg Leu Trp Ser Tyr Leu Thr Thr Lys Glu Leu | | |
| 575 | 580 | 585 |
| Leu Ser Ser Trp Leu Gln Ser Asp Asp Glu Pro Glu Lys Glu Arg | | |
| 590 | 595 | 600 |
| Leu Arg Gln Arg Ala Gln Ala Leu Ala Val Ser Tyr Arg Phe Leu | | |
| 605 | 610 | 615 |
| Thr Pro Phe Thr Ser Met Lys Leu Arg Gly Pro Val Pro Arg Met | | |
| 620 | 625 | 630 |
| Asp Gly Leu Glu Glu Ala His Gly Met Ser Ala Ala Met Gly Pro | | |
| 635 | 640 | 645 |
| Glu Pro Val Val Gln Ser Val Arg Gly Ala Gly Thr Gln Pro Gly | | |
| 650 | 655 | 660 |
| Pro Leu Leu Lys Lys Pro Asn Ser Val Lys Lys Lys Gln Asn Lys | | |
| 665 | 670 | 675 |
| Thr Lys Lys Arg His Gly Arg Asp Gly Val Phe Pro Leu His His | | |
| 680 | 685 | 690 |
| Leu Gly Ile Arg | | |

<210> 56
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 56
gtgggaacca aactccggca gacc 24

<210> 57
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 57
cacatcgagc gtctctgg 18

<210> 58
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 58
agccgctcct tctccggttc atcg 24

<210> 59
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 59
tggaaggacc acttgatatt agtcactcca gacagcatca gggatggg 48

<210> 60
<211> 1413
<212> DNA
<213> Homo Sapien

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<211> 440
<212> PRT
<213> Homo Sapien

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| | | | |
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| 20 | 25 | 30 | |
| Phe Ser Ala Ala Ala | Leu Ile Pro Thr Gly Asp | Gly Gln Asn Leu | |
| 35 | 40 | 45 | |
| Phe Thr Lys Asp Val | Thr Val Ile Glu Gly Glu | Val Ala Thr Ile | |
| 50 | 55 | 60 | |
| Ser Cys Gln Val Asn | Lys Ser Asp Asp Ser | Val Ile Gln Leu Leu | |
| 65 | 70 | 75 | |
| Asn Pro Asn Arg Gln | Thr Ile Tyr Phe Arg | Asp Phe Arg Pro Leu | |
| 80 | 85 | 90 | |
| Lys Asp Ser Arg Phe | Gln Leu Leu Asn Phe | Ser Ser Ser Glu Leu | |
| 95 | 100 | 105 | |
| Lys Val Ser Leu Thr | Asn Val Ser Ile Ser | Asp Glu Gly Arg Tyr | |
| 110 | 115 | 120 | |
| Phe Cys Gln Leu Tyr | Thr Asp Pro Pro Gln | Glu Ser Tyr Thr Thr | |
| 125 | 130 | 135 | |
| Ile Thr Val Leu Val | Pro Pro Arg Asn Leu | Met Ile Asp Ile Gln | |
| 140 | 145 | 150 | |
| Lys Asp Thr Ala Val | Glu Gly Glu Glu Ile | Glu Val Asn Cys Thr | |
| 155 | 160 | 165 | |
| Ala Met Ala Ser Lys | Pro Ala Thr Thr Ile | Arg Trp Phe Lys Gly | |
| 170 | 175 | 180 | |
| Asn Thr Glu Leu Lys | Gly Lys Ser Glu Val | Glu Glu Trp Ser Asp | |
| 185 | 190 | 195 | |
| Met Tyr Thr Val Thr | Ser Gln Leu Met Leu | Lys Val His Lys Glu | |
| 200 | 205 | 210 | |
| Asp Asp Gly Val Pro | Val Ile Cys Gln Val | Glu His Pro Ala Val | |
| 215 | 220 | 225 | |
| Thr Gly Asn Leu Gln | Thr Gln Arg Tyr Leu | Glu Val Gln Tyr Lys | |
| 230 | 235 | 240 | |
| Pro Gln Val His Ile | Gln Met Thr Tyr Pro | Leu Gln Gly Leu Thr | |
| 245 | 250 | 255 | |
| Arg Glu Gly Asp Ala | Leu Glu Leu Thr Cys | Glu Ala Ile Gly Lys | |
| 260 | 265 | 270 | |
| Pro Gln Pro Val Met | Val Thr Trp Val Arg | Val Asp Asp Glu Met | |
| 275 | 280 | 285 | |
| Pro Gln His Ala Val | Leu Ser Gly Pro Asn | Leu Phe Ile Asn Asn | |
| 290 | 295 | 300 | |
| Leu Asn Lys Thr Asp | Asn Gly Thr Tyr Arg | Cys Glu Ala Ser Asn | |



305

310

315

Ile Val Gly Lys Ala His Ser Asp Tyr Met Leu Tyr Val Tyr Asp
320 325 330

Pro Pro Thr Thr Ile Pro Pro Pro Thr Thr Thr Thr Thr Thr Thr
335 340 345

Thr Thr Thr Thr Thr Thr Ile Leu Thr Ile Ile Thr Asp Ser Arg
350 355 360

Ala Gly Glu Glu Gly Ser Ile Arg Ala Val Asp His Ala Val Ile
365 370 375

Gly Gly Val Val Ala Val Val Val Phe Ala Met Leu Cys Leu Leu
380 385 390

Ile Ile Leu Gly Arg Tyr Phe Ala Arg His Lys Gly Thr Tyr Phe
395 400 405

Thr His Glu Ala Lys Gly Ala Asp Asp Ala Ala Asp Ala Asp Thr
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425 430 435

Lys Glu Tyr Phe Ile
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<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 62

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<210> 63

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 63

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<210> 64

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<213> Artificial Sequence

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<400> 64
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<210> 65
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<210> 66
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<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 66
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<210> 67
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 67
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<210> 68
<211> 2555
<212> DNA
<213> Homo Sapien

<400> 68
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[illegible]

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 <211> 598
 <212> PRT
 <213> Homo Sapien

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 20 25 30
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 35 40 45
 Val Pro Arg Asp Val Pro Pro Asp Thr Val Gly Leu Tyr Val Phe
 50 55 60
 Glu Asn Gly Ile Thr Met Leu Asp Ala Ser Ser Phe Ala Gly Leu
 65 70 75
 Pro Gly Leu Gln Leu Leu Asp Leu Ser Gln Asn Gln Ile Ala Ser
 80 85 90
 Leu Arg Leu Pro Arg Leu Leu Leu Leu Asp Leu Ser His Asn Ser
 95 100 105
 Leu Leu Ala Leu Glu Pro Gly Ile Leu Asp Thr Ala Asn Val Glu

| | | | | | | | | | | | | | | |
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| Ala | Leu | Arg | Leu | Ala | Gly | Leu | Gly | Leu | Gln | Gln | Leu | Asp | Glu | Gly |
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| Leu | Phe | Ser | Arg | Leu | Arg | Asn | Leu | His | Asp | Leu | Asp | Val | Ser | Asp |
| | | | | 140 | | | | | 145 | | | | | 150 |
| Asn | Gln | Leu | Glu | Arg | Val | Pro | Pro | Val | Ile | Arg | Gly | Leu | Arg | Gly |
| | | | | 155 | | | | | 160 | | | | | 165 |
| Leu | Thr | Arg | Leu | Arg | Leu | Ala | Gly | Asn | Thr | Arg | Ile | Ala | Gln | Leu |
| | | | | 170 | | | | | 175 | | | | | 180 |
| Arg | Pro | Glu | Asp | Leu | Ala | Gly | Leu | Ala | Ala | Leu | Gln | Glu | Leu | Asp |
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| Leu | Phe | Pro | Arg | Leu | Arg | Leu | Leu | Ala | Ala | Ala | Arg | Asn | Pro | Phe |
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| Ser | His | Val | Thr | Leu | Ala | Ser | Pro | Glu | Glu | Thr | Arg | Cys | His | Phe |
| | | | | 245 | | | | | 250 | | | | | 255 |
| Pro | Pro | Lys | Asn | Ala | Gly | Arg | Leu | Leu | Leu | Glu | Leu | Asp | Tyr | Ala |
| | | | | 260 | | | | | 265 | | | | | 270 |
| Asp | Phe | Gly | Cys | Pro | Ala | Thr | Thr | Thr | Thr | Ala | Thr | Val | Pro | Thr |
| | | | | 275 | | | | | 280 | | | | | 285 |
| Thr | Arg | Pro | Val | Val | Arg | Glu | Pro | Thr | Ala | Leu | Ser | Ser | Ser | Leu |
| | | | | 290 | | | | | 295 | | | | | 300 |
| Ala | Pro | Thr | Trp | Leu | Ser | Pro | Thr | Ala | Pro | Ala | Thr | Glu | Ala | Pro |
| | | | | 305 | | | | | 310 | | | | | 315 |
| Ser | Pro | Pro | Ser | Thr | Ala | Pro | Pro | Thr | Val | Gly | Pro | Val | Pro | Gln |
| | | | | 320 | | | | | 325 | | | | | 330 |
| Pro | Gln | Asp | Cys | Pro | Pro | Ser | Thr | Cys | Leu | Asn | Gly | Gly | Thr | Cys |
| | | | | 335 | | | | | 340 | | | | | 345 |
| His | Leu | Gly | Thr | Arg | His | His | Leu | Ala | Cys | Leu | Cys | Pro | Glu | Gly |
| | | | | 350 | | | | | 355 | | | | | 360 |
| Phe | Thr | Gly | Leu | Tyr | Cys | Glu | Ser | Gln | Met | Gly | Gln | Gly | Thr | Arg |
| | | | | 365 | | | | | 370 | | | | | 375 |
| Pro | Ser | Pro | Thr | Pro | Val | Thr | Pro | Arg | Pro | Pro | Arg | Ser | Leu | Thr |
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| Leu | Gly | Ile | Glu | Pro | Val | Ser | Pro | Thr | Ser | Leu | Arg | Val | Gly | Leu |
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<223> Synthetic oligonucleotide probe

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<211> 24

<213> Artificial Sequence

<223> Synthetic oligonucleotide probe

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 <210> 72
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 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 72
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 <210> 73
 <211> 45
 <212> DNA
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 <223> Synthetic oligonucleotide probe

 <400> 73
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 <212> DNA
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TOP SECRET 4844560

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<212> PRT
<213> Homo Sapien

<400> 76
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Leu Trp Leu Ser Trp Gly Ala Ala Leu Gly Ala Val Ala Cys Ala
35 40 45
Met Ala Leu Leu Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg
50 55 60
Glu Val Ser Arg Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly
65 70 75
Glu Gly Tyr Pro Trp Gln Ser Leu Pro Glu Gln Ser Ser Asp Ala
80 85 90
Leu Glu Ala Trp Glu Asn Gly Glu Arg Ser Arg Lys Arg Arg Ala
95 100 105
Val Leu Thr Gln Lys Gln Lys Lys Gln His Ser Val Leu His Leu
110 115 120

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Pro | Ile | Asn | Ala | Thr | Ser | Lys | Asp | Asp | Ser | Asp | Val | Thr | Glu |
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| | | | | 140 | | | | | 145 | | | | | 150 |
| Gln | Gly | Tyr | Gly | Val | Arg | Ile | Gln | Asp | Ala | Gly | Val | Tyr | Leu | Leu |
| | | | | 155 | | | | | 160 | | | | | 165 |
| Tyr | Ser | Gln | Val | Leu | Phe | Gln | Asp | Val | Thr | Phe | Thr | Met | Gly | Gln |
| | | | | 170 | | | | | 175 | | | | | 180 |
| Val | Val | Ser | Arg | Glu | Gly | Gln | Gly | Arg | Gln | Glu | Thr | Leu | Phe | Arg |
| | | | | 185 | | | | | 190 | | | | | 195 |
| Cys | Ile | Arg | Ser | Met | Pro | Ser | His | Pro | Asp | Arg | Ala | Tyr | Asn | Ser |
| | | | | 200 | | | | | 205 | | | | | 210 |
| Cys | Tyr | Ser | Ala | Gly | Val | Phe | His | Leu | His | Gln | Gly | Asp | Ile | Leu |
| | | | | 215 | | | | | 220 | | | | | 225 |
| Ser | Val | Ile | Ile | Pro | Arg | Ala | Arg | Ala | Lys | Leu | Asn | Leu | Ser | Pro |
| | | | | 230 | | | | | 235 | | | | | 240 |
| His | Gly | Thr | Phe | Leu | Gly | Phe | Val | Lys | Leu | | | | | |
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<210> 77

<211> 2849

<212> DNA

<213> Homo Sapien

<400> 77

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<210> 78

<211> 281

<212> PRT

<213> Homo Sapien

<400> 78

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| Leu | Ala | Phe | Ala | Ser | Gly | Leu | Val | Leu | Ser | Arg | Val | Pro | His | Val |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Gln | Gly | Glu | Gln | Gln | Glu | Trp | Glu | Gly | Thr | Glu | Glu | Leu | Pro | Ser |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Pro | Pro | Asp | His | Ala | Glu | Arg | Ala | Glu | Glu | Gln | His | Glu | Lys | Tyr |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Pro | Ser | Gln | Asp | Gln | Gly | Leu | Pro | Ala | Ser | Arg | Cys | Leu | Arg |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Cys | Cys | Asp | Pro | Gly | Thr | Ser | Met | Tyr | Pro | Ala | Thr | Ala | Val | Pro |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Gln | Ile | Asn | Ile | Thr | Ile | Leu | Lys | Gly | Glu | Lys | Gly | Asp | Arg | Gly |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Asp | Arg | Gly | Leu | Gln | Gly | Lys | Tyr | Gly | Lys | Thr | Gly | Ser | Ala | Gly |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | | 110 | | | | | 115 | | | | | 120 | |
| Ala | Arg | Gly | His | Thr | Gly | Pro | Lys | Gly | Gln | Lys | Gly | Ser | Met | Gly | |
| | | | | 125 | | | | | 130 | | | | | 135 | |
| Ala | Pro | Gly | Glu | Arg | Cys | Lys | Ser | His | Tyr | Ala | Ala | Phe | Ser | Val | |
| | | | | 140 | | | | | 145 | | | | | 150 | |
| Gly | Arg | Lys | Lys | Pro | Met | His | Ser | Asn | His | Tyr | Tyr | Gln | Thr | Val | |
| | | | | 155 | | | | | 160 | | | | | 165 | |
| Ile | Phe | Asp | Thr | Glu | Phe | Val | Asn | Leu | Tyr | Asp | His | Phe | Asn | Met | |
| | | | | 170 | | | | | 175 | | | | | 180 | |
| Phe | Thr | Gly | Lys | Phe | Tyr | Cys | Tyr | Val | Pro | Gly | Leu | Tyr | Phe | Phe | |
| | | | | 185 | | | | | 190 | | | | | 195 | |
| Ser | Leu | Asn | Val | His | Thr | Trp | Asn | Gln | Lys | Glu | Thr | Tyr | Leu | His | |
| | | | | 200 | | | | | 205 | | | | | 210 | |
| Ile | Met | Lys | Asn | Glu | Glu | Glu | Val | Val | Ile | Leu | Phe | Ala | Gln | Val | |
| | | | | 215 | | | | | 220 | | | | | 225 | |
| Gly | Asp | Arg | Ser | Ile | Met | Gln | Ser | Gln | Ser | Leu | Met | Leu | Glu | Leu | |
| | | | | 230 | | | | | 235 | | | | | 240 | |
| Arg | Glu | Gln | Asp | Gln | Val | Trp | Val | Arg | Leu | Tyr | Lys | Gly | Glu | Arg | |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Glu | Asn | Ala | Ile | Phe | Ser | Glu | Glu | Leu | Asp | Thr | Tyr | Ile | Thr | Phe | |
| | | | | 260 | | | | | 265 | | | | | 270 | |
| Ser | Gly | Tyr | Leu | Val | Lys | His | Ala | Thr | Glu | Pro | | | | | |
| | | | | 275 | | | | | 280 | | | | | | |

<210> 79

<212> DNA

<220>

<400> 79

<210> 80

<212> DNA

<220>

<400> 80

<210> 81

<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 81
cccgggtgctt gcgctgctgt gaccccggtg cctccatgta cccgg 45

<210> 82
<211> 2284
<212> DNA
<213> Homo Sapien

<400> 82
gcggagcatc cgctgcggtc ctgcgcgaga ccccgcgcg gattcgccgg 50
tccttccgcg gggcgcgaca gagctgtcct cgcacctgga tggcagcagg 100
ggcgccgggg tcctctcgac gccagagaga aatctcatca tctgtgcagc 150
cttcttaaag caaactaaga ccagagggag gattatcctt gacctttgaa 200
gacaaaaact aaactgaaat ttaaaatggt cttcggggga gaaggagct 250
tgacttacac tttggtaata atttgcttcc tgacactaag gctgtctgct 300
agtcagaatt gcctcaaaaa gagtctagaa gatgttgtca ttgacatoca 350
gtcatctctt tctaaggga tcagaggcaa tgagcccgta tatacttcaa 400
ctcaagaaga ctgcattaat tcttgctggt caacaaaaaa catatcaggg 450
gacaaagcat gtaacttgat gatcttcgac actcgaaaaa cagctagaca 500
acccaactgc tacctatctt tctgtcccaa cgaggaagcc tgtccattga 550
aaccagcaaa aggacttatg agttacagga taattacaga ttttccatct 600
ttgaccagaa atttgccaag ccaagagtta ccccgaggaag attctctctt 650
acatggccaa ttttcacaag cagtcactcc cctagcccat catcacacag 700
attattcaaa gccaccgat atctcatgga gagacacact ttctcagaag 750
tttgatcct cagatcacct ggagaaacta ttttaagatgg atgaagcaag 800
tgcccagctc cttgcttata aggaaaaagg ccattctcag agttcacaat 850
tttctctga tcaagaaata gctcatctgc tgctgaaaa tgtgagtgcg 900
ctcccagcta cggtggcagt tgcttctcca cataccacct cggctactcc 950
aaagcccgcc acccttctac ccaccaatgc ttcagtgaca ccttctggga 1000
cttcccagcc acagctggcc accacagctc cacctgtaac cactgtcact 1050

| | | | | | |
|-------------|-------------|------------|-------------|-------------|------|
| tctcagccctc | ccacgacctt | catttctaca | gttttttacac | gggctgcggc | 1100 |
| tacactccaa | gcaatggcta | caacagcagt | tctgactacc | accttttcagg | 1150 |
| cacctacgga | ctcgaaaggc | agcttagaaa | ccataccgtt | tacagaaatc | 1200 |
| tccaacttaa | ctttgaacac | agggaatgtg | tataacccta | ctgcactttc | 1250 |
| tatgtcaaat | gtggagtctt | ccactatgaa | taaaactgct | tcctgggaag | 1300 |
| gtagggaggc | cagtccaggc | agttcctccc | agggcagtgt | tccagaaaat | 1350 |
| cagtacggcc | ttccatttga | aaaatggctt | cttatcgggt | ccctgctctt | 1400 |
| tggtgtcctg | ttcctgggtga | taggcctcgt | cctcctgggt | agaatccttt | 1450 |
| cggaatcact | ccgcaggaaa | cgttactcaa | gactggatta | tttgatcaat | 1500 |
| gggatctatg | tggacatcta | aggatggaac | tcgggtgtctc | ttaattcatt | 1550 |
| tagtaaccag | aagcccaa | gcaatgagtt | tctgctgact | tgctagtctt | 1600 |
| agcaggaggt | tgtattttga | agacaggaaa | atgccccctt | ctgctttcct | 1650 |
| tttttttttt | ggagacagag | tcttgctctg | ttgccaggc | tggagtgcag | 1700 |
| tagcacgata | tcggctctca | ccgcaacctc | cgtctcctgg | gttcaagcga | 1750 |
| ttctcctgcc | tcagcctcct | aagtatctgg | gattacaggc | atgtgccacc | 1800 |
| acacctgggt | gattttttgta | tttttagtag | agacgggggt | tcaccatggt | 1850 |
| ggtcaggctg | gtctcaaaact | cctgacctag | tgatccaccc | tcctcggcct | 1900 |
| cccaaagtgc | tgggattaca | ggcatgagcc | accacagctg | gcccccttct | 1950 |
| gttttatggt | tggtttttga | gaaggaatga | agtgggaacc | aaattaggta | 2000 |
| attttgggta | atctgtctct | aaaatattag | ctaaaaacaa | agctctatgt | 2050 |
| aaagtaataa | agtataattg | ccatataaat | ttcaaaattc | aactggcctt | 2100 |
| tatgcaaaga | aacagggttag | gacatctagg | ttccaattca | ttcacattct | 2150 |
| tggttccaga | taaaatcaac | tgtttatatc | aatttcta | ggatttgctt | 2200 |
| ttctttttat | atggattcct | ttaaaactta | ttccagatgt | agttccttcc | 2250 |
| aattaaatat | ttgaataaat | cttttgttac | tcaa | 2284 | |

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<210> 83
<211> 431
<212> PRT
<213> Homo Sapien
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| | | | | | |
|---------------------|-----------------|-------------------------|-----|-----|-----|
| Ile Cys Phe Leu Thr | Leu Arg Leu Ser | Ala Ser Gln Asn Cys Leu | 20 | 25 | 30 |
| Lys Lys Ser Leu Glu | Asp Val Val Ile | Asp Ile Gln Ser Ser Leu | 35 | 40 | 45 |
| Ser Lys Gly Ile Arg | Gly Asn Glu Pro | Val Tyr Thr Ser Thr Gln | 50 | 55 | 60 |
| Glu Asp Cys Ile Asn | Ser Cys Cys Ser | Thr Lys Asn Ile Ser Gly | 65 | 70 | 75 |
| Asp Lys Ala Cys Asn | Leu Met Ile Phe | Asp Thr Arg Lys Thr Ala | 80 | 85 | 90 |
| Arg Gln Pro Asn Cys | Tyr Leu Phe Phe | Cys Pro Asn Glu Glu Ala | 95 | 100 | 105 |
| Cys Pro Leu Lys Pro | Ala Lys Gly Leu | Met Ser Tyr Arg Ile Ile | 110 | 115 | 120 |
| Thr Asp Phe Pro Ser | Leu Thr Arg Asn | Leu Pro Ser Gln Glu Leu | 125 | 130 | 135 |
| Pro Gln Glu Asp Ser | Leu Leu His Gly | Gln Phe Ser Gln Ala Val | 140 | 145 | 150 |
| Thr Pro Leu Ala His | His His Thr Asp | Tyr Ser Lys Pro Thr Asp | 155 | 160 | 165 |
| Ile Ser Trp Arg Asp | Thr Leu Ser Gln | Lys Phe Gly Ser Ser Asp | 170 | 175 | 180 |
| His Leu Glu Lys Leu | Phe Lys Met Asp | Glu Ala Ser Ala Gln Leu | 185 | 190 | 195 |
| Leu Ala Tyr Lys Glu | Lys Gly His Ser | Gln Ser Ser Gln Phe Ser | 200 | 205 | 210 |
| Ser Asp Gln Glu Ile | Ala His Leu Leu | Pro Glu Asn Val Ser Ala | 215 | 220 | 225 |
| Leu Pro Ala Thr Val | Ala Val Ala Ser | Pro His Thr Thr Ser Ala | 230 | 235 | 240 |
| Thr Pro Lys Pro Ala | Thr Leu Leu Pro | Thr Asn Ala Ser Val Thr | 245 | 250 | 255 |
| Pro Ser Gly Thr Ser | Gln Pro Gln Leu | Ala Thr Thr Ala Pro Pro | 260 | 265 | 270 |
| Val Thr Thr Val Thr | Ser Gln Pro Pro | Thr Thr Leu Ile Ser Thr | 275 | 280 | 285 |
| Val Phe Thr Arg Ala | Ala Ala Thr Leu | Gln Ala Met Ala Thr Thr | 290 | 295 | 300 |
| Ala Val Leu Thr Thr | Thr Phe Gln Ala | Pro Thr Asp Ser Lys Gly | | | |

| | | |
|-------------------------------------|-------------------------|-----|
| 305 | 310 | 315 |
| Ser Leu Glu Thr Ile Pro Phe Thr Glu | Ile Ser Asn Leu Thr Leu | |
| 320 | 325 | 330 |
| Asn Thr Gly Asn Val Tyr Asn Pro Thr | Ala Leu Ser Met Ser Asn | |
| 335 | 340 | 345 |
| Val Glu Ser Ser Thr Met Asn Lys Thr | Ala Ser Trp Glu Gly Arg | |
| 350 | 355 | 360 |
| Glu Ala Ser Pro Gly Ser Ser Ser Gln | Gly Ser Val Pro Glu Asn | |
| 365 | 370 | 375 |
| Gln Tyr Gly Leu Pro Phe Glu Lys Trp | Leu Leu Ile Gly Ser Leu | |
| 380 | 385 | 390 |
| Leu Phe Gly Val Leu Phe Leu Val Ile | Gly Leu Val Leu Leu Gly | |
| 395 | 400 | 405 |
| Arg Ile Leu Ser Glu Ser Leu Arg Arg | Lys Arg Tyr Ser Arg Leu | |
| 410 | 415 | 420 |
| Asp Tyr Leu Ile Asn Gly Ile Tyr Val | Asp Ile | |
| 425 | 430 | |

<210> 84
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 84
 agggaggatt atccttgacc tttgaagacc 30

 <210> 85
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 85
 gaagcaagtg cccagctc 18

 <210> 86
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 86
 cggtccctg ctcttttg 18

<210> 87
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 87
caccgtagct gggagcgcac tcac 24

<210> 88
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
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<400> 88
agtgttaagtc aagctccc 18

<210> 89
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 89
gcttcctgac actaaggctg tctgctagtc agaattgcct caaaaagag 49

<210> 90
<211> 957
<212> DNA
<213> Homo Sapien

<400> 90
cctggaagat gcgcccattg gctggtggcc tgctcaaggt ggtgttcgtg 50
gtcttcgcct ccttgtgtgc ctggtattcg gggtaacctgc tcgcagagct 100
cattccagat gcacccctgt ccagtgtgc ctatagcatc cgcagcatcg 150
gggagaggcc tgtcctcaaa gctccagtcc ccaaaaggca aaaatgtgac 200
cactggactc cctgcccatac tgacacctat gcctacaggt tactcagcgg 250
agggtggcaga agcaagtacg ccaaaatctg ctttgaggat aacctactta 300
tgggagaaca gctgggaaat gttgccagag gaataaacat tgccattgtc 350
aactatgtaa ctgggaatgt gacagcaaca cgatgttttg atatgtatga 400
aggcgataac tctggaccga tgacaaagtt tattcagagt gctgctccaa 450
aatccctgct cttcatggtg acctatgacg acggaagcac aagactgaat 500

aacgatgcc aagaatgccat agaagcactt ggaagtaaag aaatcaggaa 550
 catgaaattc aggtctagct gggtatttat tgcagcaaaa ggcttggaac 600
 tcccttccga aattcagaga gaaaagatca accactctga tgctaagaac 650
 aacagatatt ctggctggcc tgcagagatc cagatagaag gctgcatacc 700
 caaagaacga agctgacact gcagggtcct gagtaaagt gttctgtata 750
 aacaaatgca gctggaatcg ctcaagaatc ttatttttct aaatccaaca 800
 gcccatatth gatgagtatt ttgggtttgt tgtaaaccaa tgaacatttg 850
 ctagttgtat caaatcttgg tacgcagtat tttatacca gtattttatg 900
 tagtgaagat gtcaattagc aggaaactaa aatgaatgga aattcttaaa 950
 aaaaaaa 957

<210> 91
 <211> 235
 <212> PRT
 <213> Homo Sapien

<400> 91
 Met Arg Pro Leu Ala Gly Gly Leu Leu Lys Val Val Phe Val Val
 1 5 10 15
 Phe Ala Ser Leu Cys Ala Trp Tyr Ser Gly Tyr Leu Leu Ala Glu
 20 25 30
 Leu Ile Pro Asp Ala Pro Leu Ser Ser Ala Ala Tyr Ser Ile Arg
 35 40 45
 Ser Ile Gly Glu Arg Pro Val Leu Lys Ala Pro Val Pro Lys Arg
 50 55 60
 Gln Lys Cys Asp His Trp Thr Pro Cys Pro Ser Asp Thr Tyr Ala
 65 70 75
 Tyr Arg Leu Leu Ser Gly Gly Gly Arg Ser Lys Tyr Ala Lys Ile
 80 85 90
 Cys Phe Glu Asp Asn Leu Leu Met Gly Glu Gln Leu Gly Asn Val
 95 100 105
 Ala Arg Gly Ile Asn Ile Ala Ile Val Asn Tyr Val Thr Gly Asn
 110 115 120
 Val Thr Ala Thr Arg Cys Phe Asp Met Tyr Glu Gly Asp Asn Ser
 125 130 135
 Gly Pro Met Thr Lys Phe Ile Gln Ser Ala Ala Pro Lys Ser Leu
 140 145 150
 Leu Phe Met Val Thr Tyr Asp Asp Gly Ser Thr Arg Leu Asn Asn
 155 160 165

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ala | Lys | Asn | Ala | Ile | Glu | Ala | Leu | Gly | Ser | Lys | Glu | Ile | Arg |
| | | | 170 | | | | | | 175 | | | | | 180 |
| Asn | Met | Lys | Phe | Arg | Ser | Ser | Trp | Val | Phe | Ile | Ala | Ala | Lys | Gly |
| | | | 185 | | | | | | 190 | | | | | 195 |
| Leu | Glu | Leu | Pro | Ser | Glu | Ile | Gln | Arg | Glu | Lys | Ile | Asn | His | Ser |
| | | | 200 | | | | | | 205 | | | | | 210 |
| Asp | Ala | Lys | Asn | Asn | Arg | Tyr | Ser | Gly | Trp | Pro | Ala | Glu | Ile | Gln |
| | | | 215 | | | | | | 220 | | | | | 225 |
| Ile | Glu | Gly | Cys | Ile | Pro | Lys | Glu | Arg | Ser | | | | | |
| | | | 230 | | | | | | 235 | | | | | |

<210> 92

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 92

aatgtgacca ctggactccc 20

<210> 93

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 93

aggcttgga ctccttc 18

<210> 94

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aagattcttg agcgattcca gctg 24

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<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 95

aatccctgct cttcatggtg acctatgacg acggaagcac aagactg 47

<210> 96
 <211> 21
 <212> DNA
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 <220>
 <223> Synthetic oligonucleotide probe

 <400> 96
 ctcaagaagc acgcgtactg c 21

 <210> 97
 <211> 25
 <212> DNA
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 <220>
 <223> Synthetic oligonucleotide probe

 <400> 97
 ccaacctcag cttccgcctc tacga 25

 <210> 98
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 <400> 98
 catccaggct cgccactg 18

 <210> 99
 <211> 20
 <212> DNA
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 <220>
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 <400> 99
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 <210> 100
 <211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 100
 atgctgccag acctgatcgc agaca 25

 <210> 101
 <211> 19
 <212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 101

gggcagaaat ccagccact 19

<210> 102

<211> 18

<212> DNA

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cccttcgcct gcttttga 18

<210> 103

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 103

gccatccta tgaagcccat cttccca 27

<210> 104

<211> 19

<212> DNA

<213> Artificial Sequence

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<400> 104

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<210> 105

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 105

cctcggctct ctcactctgtg a 21

<210> 106

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 106

tggcccagct gacgagccct 20

<210> 107

<211> 21

<212> DNA

<213> Artificial Sequence

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<223> Synthetic oligonucleotide probe

<400> 107

ctcataggca ctcggttctg g 21

<210> 108

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 108

tggtcccag cttggaaga 19

<210> 109

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 109

cagctcttgg ctgtctccag tatgtaccca 30

<210> 110

<211> 21

<212> DNA

<213> Artificial Sequence

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gatgcctctg ttcctgcaca t 21

<210> 111

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide probe

<400> 111

ggattctaatacgcactcact atagggctgc ccgcaacccc ttcaactg 48

<210> 112
<211> 48
<212> DNA
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<220>
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<400> 112
ctatgaaatt aaccctcact aaagggaccg cagctgggtg accgtgta 48

<210> 113
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 113
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<210> 114
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 114
ctatgaaatt aaccctcact aaagggactc gagacaccac ctgaccca 48

<210> 115
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide probe

<400> 115
ggattctaatacgcactcact atagggccca aggaaggcag gagactct 48

<210> 116
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Oligonucleotide probe

<400> 116
ctatgaaatt aaccctcact aaagggacta ggggggtggga atgaaaag 48

<210> 117

<211> 48
 <212> DNA
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 <220>
 <223> Synthetic oligonucleotide probe

 <400> 117
 ggatttctaatt acgactcact atagggcccc cctgagctct cccgtgta 48

 <210> 118
 <211> 48
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 118
 ctatgaaatt aaccctcact aaaggggaagg ctgccactg gtcgtaga 48

 <210> 119
 <211> 48
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 119
 ggatttctaatt acgactcact atagggcaag gagccgggac ccaggaga 48

 <210> 120
 <211> 47
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide probe

 <400> 120
 ctatgaaatt aaccctcact aaagggaggg ggccttggt gctgagt 47